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DECEMBER 10, 1938

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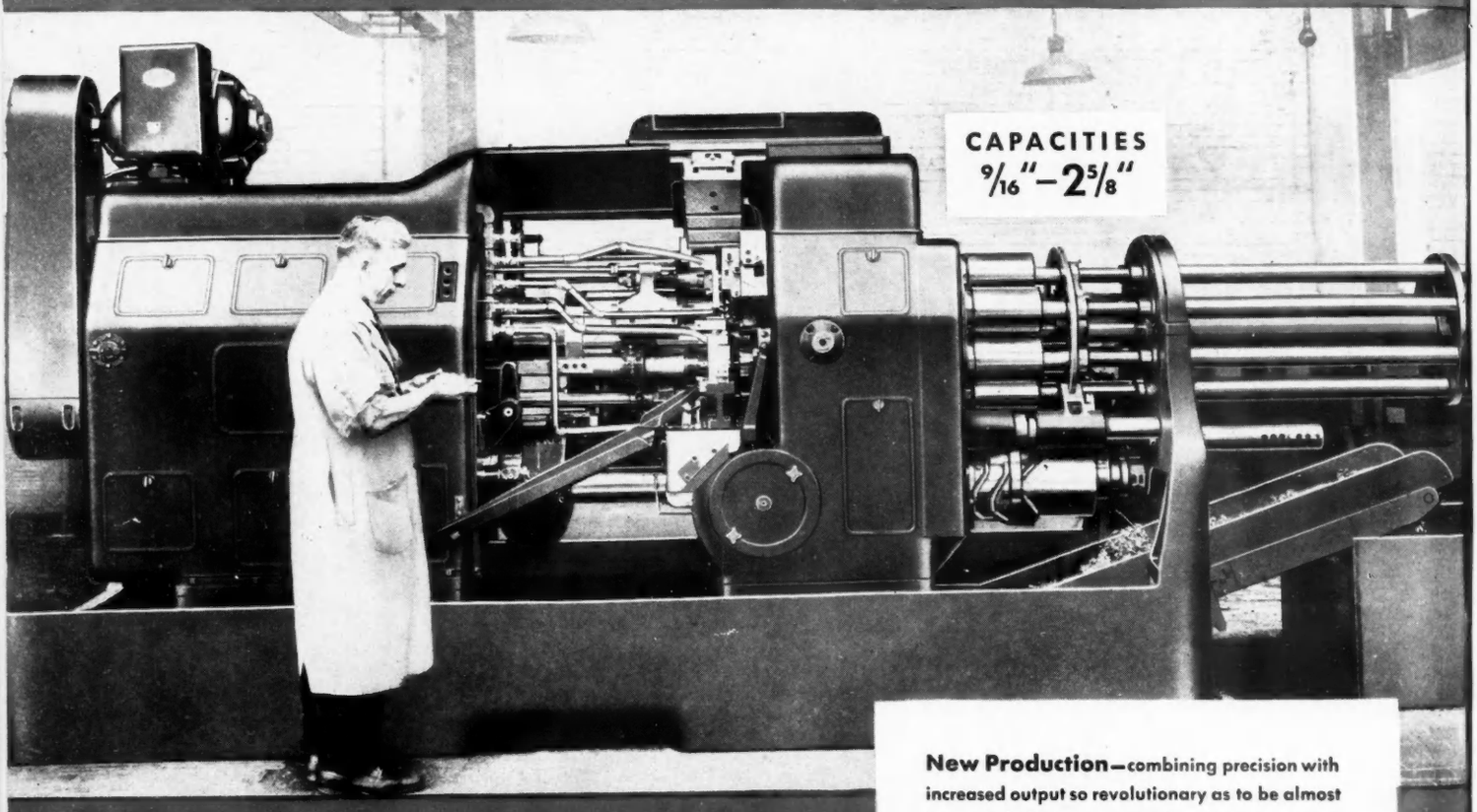

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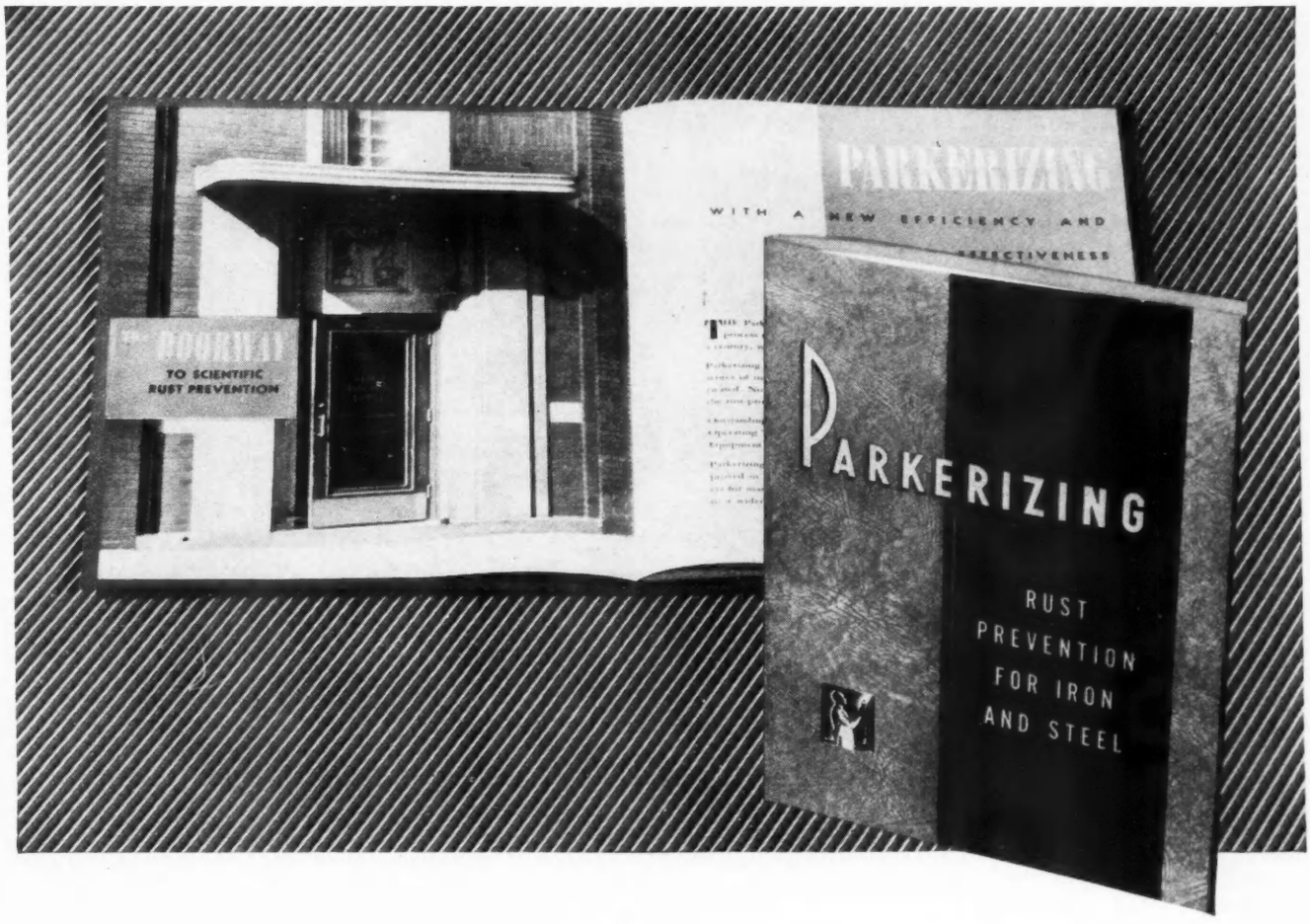

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AUTOMOTIVE INDUSTRIES
The AUTOMOBILE

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Published Weekly

Volume 79 Number 24

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AUTOMOTIVE INDUSTRIES

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December 10, 1938

News of the Industry

OVER THE COUNTER

• Oldsmobile reports that final returns from the New York automobile show reveal that retail sales in New York were 52 per cent greater than the show sales recorded there a year ago. New car deliveries during the second 10-day period of November, according to D. E. Ralston, general sales manager, showed a rise of more than 21 per cent over the first 10 days and an increase of nearly 24 per cent over the second 10 days of November last year.

• A sales performance that overshadows records for the entire run of the 1938 models was reported for Cadillac-LaSalle by general sales manager D. E. Ahrens. Unfilled orders were reported not only ahead of a year ago, but surpass the volume at the same date in the fall of 1936 when the company was entering its biggest year. The second 10-day period in November was reported as 28 per cent above the same period last year.

• In the second 10 days of November domestic retail deliveries of Buicks increased six per cent over the first ten days and slightly more than nine per cent over the same period in 1937, according to W. F. Hufstader, general sales manager.

• November retail sales of Ford group units exceeded those of any other month of 1938, it was announced by the Ford Motor Co. The combined sales of Ford cars and trucks, Mercury, Lincoln-Zephyr and Lincoln cars reached a total of 50,406 units. Sales are still ahead of production, company officials said.

• Retail sales of Pontiac division of General Motors Corp. were reported as amounting to 14,761 units in November. This represented an increase of 77 per cent over October and 15 per cent over November last year.

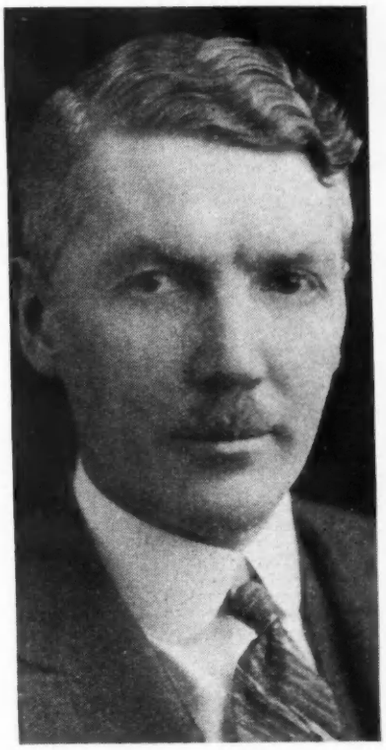
• Studebaker sales were up 36 per cent in November, according to statistics released by Paul G. Hoffman, president of The Studebaker Corp. Mr. Hoffman reported the sale of 6830 cars and trucks last month compared with 5018 in November, 1937.

A.M.A. EXPORT MEETING

• "It is to be hoped that one of the incidental results of the 8th International Conference of the American States in Lima, Peru, will be a wider understanding and acceptance of the Most-Favored-Nation principle in world commerce, particularly as it applies throughout the Western hemisphere. This thought was expressed by Edgar W. Smith, vice chairman of the export committee of the Automobile Manufacturers Association, at a meeting held last week in Washington and devoted to overseas trade.

Attention was given at the export meeting to current problems involving exchange facilities in Argentine and Yugoslavia, import permits in Chile, and various automotive trade developments in Panama, Santo Domingo, France and Hungary.

Plans were also perfected for an overseas organization of the industry's factory representatives in Europe in order to permit more prompt analysis and solution of current problems as they may develop in the nations on that continent.



WILLIAM J. O'NEILL

. . . former vice-president of Dodge Brothers Corp., has been advanced to president and general manager.

AUTOMOTIVE INDUSTRIES

Summary of Automotive Production Activity
(Week Ending Dec. 10)

BUSES One of the largest producers, which reported slackening last week, this week reports an upward turn. A few worthwhile orders have been reported and the outlook seems to be bright with manufacturers expecting upswing after the first of the year.

TRUCKS Deliveries holding up well. Several companies are working on a number of large inquiries and all producers seem pleased with prospects for the coming year.

TRACTORS Virtually no important changes in the situation as reported last week.

AUTOMOBILES November production estimated by Automobile Manufacturers Association at 383,040. AUTOMOTIVE INDUSTRIES production estimate for week ending Dec. 10 is 100,000 units. No signs of let-up in production rate and sales continue well up.

MARINE ENGINES Prospects for an early upturn next year are definitely brightening. Several large distributors report a quickening of interest in marine power plants. The smaller Diesel types have brought numerous inquiries from boat owners and builders.

AIRCRAFT ENGINES Production nearly at peak in plants with approved types of engines; research work and experimental work is progressing at top speed.

This summary is based on confidential information of current actual production rates from leading producers in each field covered. Staff members in Detroit, Chicago, New York and Philadelphia collect the basic information, in all cases from official factory sources.

Production

A.M.A. Car Output Estimate Set at 383,040 for November

The automobile industry's healthy pace of production which pushed the output total for last week up to an estimated 100,500 cars and trucks was preserved this week. Short-lived strike interruptions and minor revisions in operating rates made by some of the independents, several of whom boosted their schedules while others made slight reductions, had very little effect on the aggregate output. According to a mid-week survey, production for the week ended Dec. 10 should total approximately 100,000 units.

Slight increases reported by Cadillac, La Salle, De Soto, Graham, Studebaker, and Willys counteracted minor downward revisions made by

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News of the Industry

HOW'S BUSINESS?

• Monthly turn-over rates (per 100 employes) in the automobile and body manufacturing industry, as reported by the U. S. Department of Labor were, for October, 1938, quit—0.34; discharged—0.04; laid off—1.41. For September the rate was: quit—0.47; discharged—0.09; laid off—2.98. For October, 1937 the rate was: quit—0.96; discharged—0.15; laid off—2.33.

• President Smith of the Chris-Craft Corp. has announced that, although daily production has twice been stepped up since 1939 models were introduced, output is still far behind retail sales. November sales are estimated at $256,000, with 1939 model sales expected to be at least 25 per cent ahead of 1938 model sales.

• Total man hours worked in the automobile industry jumped 44.5 per cent from September to October, according to figures received from manufacturers by the statistical division of the National Industrial Conference Board.

• Due to a reported extraordinary demand for superfinishing equipment, the Chrysler Corp. has licensed the Cincinnati Milling Machine Co. and the Norton Co. for manufacturing. For approximately six months the Foster Machine Co. has been manufacturing superfinishing equipment for the corporation.

• Increasing foreign demand for airplanes has boomed the orders to California factories to a new high. It was disclosed this week that orders on hand now for Southern California plants totaled $67,000,000.

• Boeing Airplane Co. is now operating at the highest man-hour rate in the history of the company with a payroll of 2600. The first clipper ship for the Pan American Airways is complete and now being tested by C.A.A., delivery will probably be made before the close of the year.

The second clipper has been completed and fitted and will be launched this week. After the tests have been made on the first and an approved type certificate issued, the others require only ten hours testing before delivery. No. 3 will go on the outer drydock as soon as No. 2 is launched and will then have the wings installed and be finished. No. 4 is nearing completion in the hull jig, No. 5 hull is half assembled and all major parts for No. 6 have been completed, although assembly has not started. All wing work is practically complete.

It seems certain, barring unforeseen test delay, that three Clippers will be delivered to Pan American by the end of January, and the remaining three within the next three months. Sale price is understood to be $500,000 each.

• Royal Canadian Air Force authorities at Ottawa, Ont., expect that by midsummer all aircraft constructed under the 1937 and 1938 defense programs will be delivered. The airplane industry will then be turning out, more speedily than previously, the planes contemplated in the program which the Canadian Parliament will vote next session. The fill up given to the industry by the $10,000,000 order from the British Government has resulted in plans being drawn up for a well co-ordinated expansion. Not only will the companies concerned be equipped with facilities to handle British orders, but the enlargement necessitated by these will enable them to take care more quickly of Canada's aircraft demands. Efforts to popularize the R.C.A.F. and develop airmindedness among the Canadian people will be continued.

• For the third successive month the number of employes at the Glenn L. Martin Co. plant at Middle River, Md., established a new high, reaching a total on November 30 of 14 per cent above Aug. 30 figures. The increase in employment reflects increased utilization of additional production facilities afforded by plant expansions completed earlier in the year.

• Ford Motor Co. Memphis assembly plant added 200 men to its payroll last week to increase daily output to 195 cars. The increase to the working force was the second since Nov. 1 and brings the total to about 900 men.

COMFORTRIAL

• Something new in tractor promotion in taking advantage of their product's versatility was noted on Monday of this week when 125 or more Minneapolis-Moline salesmen started covering their dealer territories riding in new MM Comfortractors. Upon arrival of the salesman, each dealer will hold a "show" day for interested prospects.

DIVIDENDS

• At a meeting of the board of directors of the Waukesha Motor Co. held Dec. 2, payment of the regular quarterly dividend of 25 cents per share, payable Jan. 3, 1939, on the five dollar par common stock was authorized. The dividend will be paid to stockholders of record at the close of business Dec. 15, 1938.

At the same meeting, the treasurer's report for the first quarter of the company's fiscal year was approved and released for publication. It shows that the earnings as of Oct. 31, 1938, closing the first quarter, are $25,191.00, after reserve for normal State and Federal income taxes, but without provision for undistributed profits tax.

• Consolidated Aircraft Co. declared a common dividend of $1 a share, payable Dec. 19 to stock of record Dec. 6. This is the second common dividend in the company's history, the first, one of 50 cents, having been paid last December.

• The regular quarterly cash dividend of 50 cents per share on 162,500 shares of common stock outstanding has been declared by the board of directors of the Perfect Circle Co. The dividend is payable Jan. 2, 1939, to stock on record Dec. 20, 1938.

Profit Sharing

Federal Tax Reduction a Good Incentive, States Edsel Ford

After testifying on automobile patents on Monday before the Temporary National Economic Committee, Edsel Ford appeared on Tuesday before the Senate Profit-Sharing Committee to tell the latter that he thought reduction in Federal taxation would be "as good an incentive" to business as anything the Government could do. The president of the Ford Motor Co. answered in the affirmative when asked by Senator Vandenberg, Republican of Michigan, if he felt that incentive taxation designed to promote plant expansion, purchase of equipment and regularization of employment might create more problems than it would solve.

Expressing a view similar to that of a number of other industrialists who have appeared before the committee, Mr. Ford said the Ford company believes in profit-sharing through high wages.

After declaring that he believed the high wage scale had prevented any serious labor troubles in Ford plants, Mr. Ford said his company tries to be more than fair to its employes, to pay just as high wages as it can and to produce at as low a cost as possible, thus creating volume production. He ventured the opinion that the company's system of sharing profits through high wages was more simplified, more workable and less paternalistic than other profit-sharing plans.

In explaining why the Ford com-

(Top of next column, please)

Passenger Car and Truck Production

(U. S. and Canada)

The 1937 ten months' figures shown in this table last week were in error in that they were year-end figures instead of ten months. The table shown below gives the corrected data.

	October 1938	September 1938	October 1937	Ten Months 1938	Ten Months 1937
Passenger Cars—U. S. and Canada					
Domestic Market—U. S.	171,371	60,177	273,753	1,209,563	3,161,151
Foreign Market—U. S.	16,123	4,982	24,909	145,072	215,025
Canada	5,412	4,290	7,378	94,140	124,454
Total	192,906	69,449	306,040	1,448,775	3,500,630
Trucks—U. S. and Canada					
Domestic Market—U. S.	16,697	8,687	22,595	265,277	588,490
Foreign Market—U. S.	5,331	9,678	8,619	108,989	158,019
Canada	362	1,799	725	35,340	45,320
Total	22,390	20,174	31,939	409,606	791,829
Total—Domestic Market—U. S.	188,068	68,874	296,348	1,474,840	3,749,641
Total—Foreign Market—U. S.	21,454	14,660	33,528	254,061	373,044
Total—Canada	5,774	6,089	8,103	129,480	169,774
Total—Cars and Trucks—U. S. and Canada	215,296	89,623	337,979	1,858,381	4,292,459

pany had no hospitalization plan, Mr. Ford said:

"We have paid our men as well as we could and have felt that they were more able to take care of their own needs than we were under some sort of paternalistic system."

The Ford company, he stated, began paying its employes wages in excess of the going rate in the motor industry in 1914 with institution of a $5-a-day minimum, when the going rate of 34c an hour was increased 28½c an hour. The minimum wage was advanced to $6 a day in 1920, the Committee was told, and has remained at that level most of the time since, except that it was reduced to $4 in the depths of the depression.

From 1914 to 1919, inclusive, Mr. Ford said, the company had paid $77,565,000 in profit sharing in excess of the established wage scale in the motor industry, and in 1920 changed to a system of cash bonuses, paying out $6,750,000 in bonuses in 1919 and 1920.

Under the present investment plan, Mr. Ford said all employes may deposit a percentage of their wages, with a guaranteed interest of 4½ per cent, plus special returns paid semi-annually, the latter reaching as high as 10 per cent. Mr. Ford said that since 1920 employes have received under this plan a total of $27,800,000, of which $15,500,000 was in guaranteed interest and $12,300,000 in special returns.

Broadening Wage-Hour Law Scope

Further broadening the scope of the wage-hour law, Administrator Elmer F. Andrews has issued an interpretative bulletin in which it is held that employees are covered by the law where the employer intends or hopes or has reason to believe that the goods or any unsegregated part of them will move in interstate commerce and that the Act makes no distinction as to the percentage of an employer's goods which move in interstate commerce.

The ruling is qualified with the warning that interpretations made by the Administrator, except where he is expressly authorized to issue such clarifications, are for the purpose of guiding in the administration of the law and may be changed by subsequent Court rulings or by the Administrator himself if he determines that the previous interpretation is incorrect.

As a sign post for those confused by the law, the Administrator

(Turn to page 758, please)

Patent Pooling Hearings Opened

Automotive Executives Appear as Witnesses in Investigation by Temporary National Economic Committee

The automobile industry's three major methods of operation under the existing patent system—Ford's free licensing plan, Packard's policy of paying and receiving royalties, and the Automobile Manufacturers Association plan of cross-licensing as practiced by most of the other companies—were described in detail by members of the industry this week before the Temporary National Economic (anti-monopoly) Committee.

Underwood & Underwood photo

Edsel Ford (left), president of the Ford Motor Co. and Alvan Macauley, president of the Packard Motor Car Co., as they met at the monopoly inquiry in Washington on Monday. After the hearing Mr. Ford told reporters he estimated that the output of his company for the 1939 model year would show a gain of about 50 per cent and an increase to around 900,000 units.

Edsel Ford, the first witness from industry to appear before the committee since it started its hearings on Dec. 1, described what was later referred to throughout the session as "the Ford plan" under which he said his company neither pays nor receives royalties for the use of patents but follows a free patent licensing policy, thereby encouraging competition in the industry. Chairman O'Mahoney and Thurman Arnold, head of the Justice Department's anti-trust division, expressed approval of the policy, the latter characterizing it as an effort to prevent a combination in restraint of the industrial arts.

The whole proceedings started off in an atmosphere of good feeling and cooperation. Mr. Ford posed with Chairman O'Mahoney and other members of the committee while cameras ground away. Hugh Cox, 33-year-old special assistant to the Attorney General, who conducted the questioning, was frequently interrupted by committee members who questioned the witness directly as the session got under way. Many observers regarded the hearing as part of the committee's plan to feature the industry's patent system as an ideal one and later by contrast to bring industries before it whose handling of the patent system is known to be disturbing to the Justice Department's anti-trust division.

Asked by Chairman O'Mahoney if he recommended the free patent licensing system for other industries, Mr. Ford asserted that every industry has its own problems but that "it has benefited the automobile industry and is well worth looking into." He suggested two changes which he said should be made in the patent system as it exists today—changes which were in general endorsed by other spokesmen for the industry. They were:

1. Placing of some restrictions on the length of time a patent application is allowed to remain in the patent office; and

2. Reinstatement of the policy under which notices of patent infringement must be given companies accused of infringement.

Beyond that, he said he was not prepared to go. Alvan Macauley, president of the Packard Motor Car Co., concurred with the recommenda-

(Turn to page 754, please)

Ninth Annual Automotive Service

Sponsored jointly by the National Standard Parts Association, the Motor and Equipment Manufacturers Association, Motor and Equipment Wholesalers, the Automotive Service Industries Show got under way, Dec. 5, for a week's session and is expected to set a new high in attendance.

Preceding the show opening many dominent facts were brought to light by speakers of note in the various meetings of sponsoring associations and others.

Col. Johnson M.E.W.A. Speaker

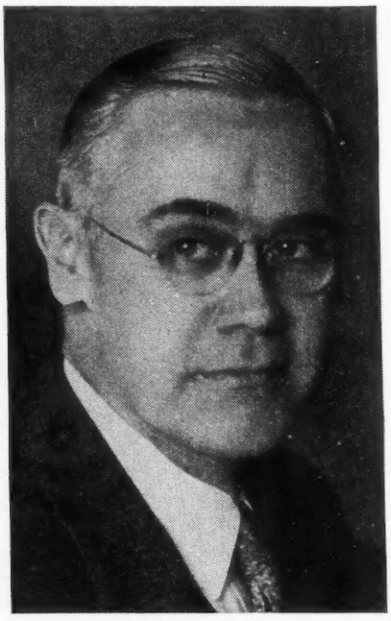
In addressing the convention of the Motor and Equipment Wholesalers convention on one of the pre-show days, Louis Johnson, assistant Secretary of War warned, "America must wake up to it's military need." He went on to say that the army would be seriously handicapped due to the lack of modern armament in case of war. In his declaration that the nation must become conscious of its military need he said, "If our army were called to battle today—it would find itself short of artillery and tanks, of combat cars and airplanes, of machine guns, semi-automatic rifles, gas-masks, search-lights and a vast number of articles too numerous to mention."

Mr. Johnson pointed out the necessity for standardization of army equipment to facilitate mass production in time of war. He expressed hope that Congress would take the steps for providing funds to build up reserve stocks of materials at once.

In concluding, he said, "today more than ever we must realize that adequate national defense is the most certain guarantee of our freedom, of our institutions and our way of life." Fully realizing the powerful influence of the wholesaling division of the automotive industry, the speaker urged this body to back the efforts being put forth by the war department for betterment of the nation's defense.

Tractor Service Possibilities Look Good

"The old gray mare ain't what she used to be," was vividly portrayed by C. W. Hertel, president of "Implement and Tractor," in his talk to the first general session of the N.S.P.A., Dec. 2, entitled, "Expanding Importance of the Tractor Market." While tractor dealers are gradually adding to their service facilities, Mr. Hertel stated that the tractor is today approximately where the motor car was 15 years ago. But, dealers are getting conscious of this new opportunity in the field of tractor service and the winter months, particularly, are presenting fertile fields not only to dealers but to equipment manufacturers whose products lend themselves to tractor service.



LESTER MATHEWS

. . . assistant treasurer of the Sealed Power Corp. was elected president of the National Standard Parts Association at its convention in Chicago. Other officers elected were V. C. Anderson of Chicago, senior vice-president; and Burke Patterson of Cleveland, junior vice-president.

It is becoming evident that the all-purpose type tractor with its higher speed due to the use of pneumatic tires, etc., will be the type on which most of the service work probably will center. Today tractor manufacturers are prepared to show that the farm with one or two teams is justified in replacing these with one or two tractors of the high-speed all-purpose type.

It must be borne in mind that tractor service is something not to be ignored. Because of the heavy service, parts replacement and adjustments are much more frequently performed. Already there are many jobbers doing tractor service on a profitable basis. This is largely true because such jobbers have acquired the necessary knowledge of the service requirements and the manner in which tractor service must be rendered as against that of passenger cars or trucks. In many sections of the country automotive parts jobbers have available "tractor replacement parts" and with the rise of tractor sales it is evident that more parts jobbers will follow suit.

Mr. Hertel stated that there were some 241,000 tractors sold in 1937 with a slightly less number in 1938 due to general agricultural and economic conditions. As a matter of interest he also pointed out that the output of our companies constitutes about 70 per cent of the total.

After Market Pioneers

In looking over the vast display of car accessories, parts, material and equipment, one cannot but come to the conclusion that many of these manufacturers realize a certain satisfaction in having pioneered practices and construction in the after market ahead of their adoption by car manufacturers later on. One need only to recall that jobbers in their machine shops quoted piston rings, pins, and bearings several years before present adoption by motor car manufacturers.

The old bromide that "what we see today in the realm of motor car design was largely pioneered on the race track" has a parallel much more accurate, however, in fact that the after market has produced much which eventually has and still does find its way into original equipment of motor cars. This includes piston rings, oil filters, heaters, windshield wipers, turn signals, lamps, fan belts, bumper guards—to name a few.

"NoRol"

Giving the driver a "third foot" is the slogan used by the Wagner Electric Corporation, in extolling the merits of its "NoRol" a device which made its appearance first in the replacement field but which is used on one of the current model passenger cars. This device is looked upon as a safety achievement preventing as it does unintentional back roll while momentarily stopped in heavy traffic where frequent starts and stops are necessary. It eliminates all tricky foot work and is entirely automatic. It does not operate while the car is in motion but only after the car comes to a positive stop.

Directional Signals

It is readily apparent from looking over the exhibits that the turn signal or directional signal which has been used on trucks for quite

Industries Show

some time is gaining considerable headway and with one passenger car, Buick using it on current models, it is reasonable to predict a more general use in the future.

Notable among the directional signal manufacturers is R. E. Dietz Company, New York. These signals are streamlined to fit the curves of the motor car bodies or fenders and made with adjustable doors so that they can be turned all the way around to make them either right or left lamps. From a jobber standpoint this is particularly desirable since it avoids the need for stocking rights and lefts. The operating switch is mounted on the steering column.

Another directional signal is that of the Teleoptic Company, Racine, Wis. This signal is a combination stop, tail and directional signal using a switch to be installed on the gear shift lever.

Yankee Metal Products Corporation, Norwalk, Conn., are producing a directional signal consisting of a double arrow unit placed on the rear of a car and a finger-tip switch mounted on a steering column. A feature of this installation is the fact that it is not necessary to drill holes to install either the unit or switch.

Turn-lite is the name given to a new directional signal for trucks, buses and passenger cars made by Do-Ray Lamp Company, Chicago. The finger-tip control in this case may be mounted either on the steering post or gear shift lever. Installation has been simplified with only four electrical connections to make. The switch is a compact unit containing a relay. fuse and pilot light. Although it is likely that car models coming through in 1939 and thereafter may incorporate turn-signals the potential market for replacement units on older models naturally is enormous.

Other Accessories

The Appleton Electric Company, Chicago, in announcing new models of Lorraine driving lights and fog lights also are exhibiting a new directional signal for passenger cars.

The advent of die-cast radiator grilles has apparently opened up a new field for manufacturers of bumper guards which offer protection to these grilles. In some instances the bumper guards are incorporated with other units. An example is the new combination grille guard especially designed to incorporate a pair of fog lamps, made by Arrow Safety Device Company, Inc., Medford, N. J.

Safety

A novel accessory and one which may find its way into quite general use is the Rear-Vu Window Wiper. This unit has been introduced by the Sleetex Company, Inc., New York. It is an electrically operated wiper with two models available, one for those having single rear glass and another for those cars having two rear windows having a dividing post in the center. The wiper is operated from a push button switch on the instrument panel.

The general trend toward safety in driving is evidenced quite forceably at the show by study of the products of manufacturers making lighting equipment and accessories. Standard Motor Products, Inc., Long Island City, N. Y., for example have introduced a headlight relay said to eliminate all contact resistance in the lighting and dimming switches as well as the resistance of the long wires used in many lighting circuits. The makers point out that this relay uses the current previously wasted in these resistances and delivers the full battery current to the lights. The device is not a current booster but rather a current waste eliminator, the maker states.

The Trippe Safety Light made by the Trippe Sales Company, Chicago, features a new safety light for attaching to the front bumper. This light mounted lower than the head lights can, by accurate aiming, be made to give visibility even in advance of the distance beams of the headlights; and when the headlights are switched for dimming, continue to give distance illumination without unduly lessening the visibility of the approaching driver. The Trippe Safety Light then, remains lighted most of the time allowing the driver to shift from brights to dims without losing either his close or distance vision. While technically this light is referred to as an auxiliary light it actually becomes the principle lighting system of the car with the headlamps auxiliary lights. The Trippe Safety Light is made with precise optical construction throwing an intense but sharply controlled beam of rather confined width between the distance beam of the headlight and the tilt beam.

Horns and Heaters

It is now possible to tune motor car horns to suit the whims of the most fastidious driver. This is witnessed by the fact that Schwarz Electric Company, of Adrian, Mich., has a new Vari-Tone air-electric horn. This incorporates a selector switch for loud or soft sound and controls the tone. The regular horn button of the car is used to sound the horn.

There is an abundance of heater designs at the show this year. The fact that Studebaker and Nash this year are providing space for a specific make and type of heater may be a fore-runner of what the future holds regarding this accessory. But even in the case of Studebaker and Nash it is still possible to install other heaters and so the aftermarket possibility on this item may not be disturbed to any extent.

Oil Filters

Probably more and more oil filters will be sold in the aftermarket on the strength of some of the passenger cars which are now coming through with oil filters, of the replaceable cartridge type as standard equipment. These installations are particularly intended for those cars operating in what is popularly called the "dust" country.

One of the most recent and novel contributions to the oil filter field is that of Motor Master Products Corporation, Chicago. This is a permanent type of oil filter and one model fits all cars, trucks and farm tractors as well as marine engines. Internally the construction incorporates a series of traps with diversified-mesh by which impurities such as sludge, grit, abrasive materials, are separated from the oil.

Scanning the host of electrically

(Turn to page 760, please)

National Standard Parts Association, Motor and Equipment Manufacturers Association, and Motor and Equipment Wholesalers Association unite for show presentation and meet separately for annual conventions

News of the Industry

AIRCRAFT

• Lockheed Aircraft Corp. has sold two of its ten-passenger type planes, suitable for conversion to military use, to the government of Colombia. The planes will be delivered in 60 days and will be placed in the service of the Saco Airways, a government subsidized airline and the first Colombia line to operate on regular schedule, according to Robert E. Gross, Lockheed president.

Both planes will be equipped to carry ten passengers and a crew of two, and will have a top speed in excess of 200 miles an hour. American-made Pratt & Whitney engines will power the planes.

• The Boeing Airplane Company's 74-passenger clipper, undergoing Government test at Seattle, established another unofficial world's record last week-end by climbing with the greatest weight ever lifted by a plane with an engine out of service, Boeing officials announced.

As part of a four hour test, the plane climbed 8000 feet on three of its four engines while carrying a full load of 82,500 pounds gross weight. With the port, outside engine stopped, the clipper was still climbing 50 feet a minute when the test, under supervision of the Civil Aeronautics Authority, ended, it was reported.

• Development of a junior transport plane, built for commercial use but easily converted to military requirements, was announced in Oakland, Calif., this week by Allan H. Lockheed, nationally known plane designer. Lockheed, no longer with the airplane firm bearing his name, said his new craft would be put into production after a proposed new factory is built.

The craft has a speed of 220 miles per hour and a cruising range of 950 miles, Lockheed reported. Its ceiling is 21,800 feet. It can take off, gain 10,000 feet altitude, and land with only one motor operating. New principles of motor placement make the plane more flexible and efficient for both commercial and military use, the designer said.

PLANT LIFE

• Alderman H. D. Wilson of Vancouver, B. C., states that a $300,000 airplane manufacturing plant will be built at Sea Island Airport next spring by Boeings Aircraft of Canada, Ltd., if present negotiations are concluded successfully. The plant would employ about 600 aircraftsmen night and day "to rush production of fighting planes for the British Government." He remarked that the company will shortly apply to the civic airport committee of which he is chairman, for a 20-year lease on a 30 acre factory site near the airport's administration building. The site has a 1,200-foot frontage on the Fraser River.

• Continuing its program of expansion in the Pacific Northwest, International Harvester Co. has under construction in Spokane a new $225,000 branch plant to serve the Inland Empire. This follows the opening of a new branch plant at Seattle last September.

Business of the company in this territory has been showing steady improvement recently, it is reported. Truck sales during November, first month of the company's fiscal year, were double the volume of last year. Not only is volume gaining in the Washington territory, but also in Alaska, which is served by the Seattle branch.

• Among the developments which Chrysler Corp. of Canada, Ltd., Windsor, Ont., is planning at present is a large spare parts manufacturing unit of the firm at Chatham, Ont., which is a location convenient to the headquarters of the establishment at Windsor. J. D. Mansfield, president of the corporation, indicated that this was one of the several ways in which his company has been spending porfits earmarked for expansion purposes. Another way in which large sums are being expanded to meet the increasing demands placed upon their manufacturing equipment is the substantial addition being made to the motor plant at Windsor.

• What is claimed to be the first installation of an induction furnace on the Pacific Coast has been made in Los Angeles by the Utility Electric Steel Foundry. The company specializes in alloy steels for refinery and aircraft construction in addition to the regular commercial analyses of heat and corrosion resistant materials. In addition, the main foundry has added 6000 sq. ft. of floor space.

• Monarch Machine Tool Co. is expanding its facilities with an the erection of a new two-story structure which will replace the present Monarch offices and will add about 35,000 sq. ft. to the area of the Monarch plant.

CONTRACTS

• The War Department last week announced that it has awarded contracts totaling $1,030,868 as a part of the Ordnance Procurement program. Among the awards are the following:

Awards under the 3" A.A. program: Timken-Detroit Axle Co., Detroit, Mich. Machining of front axles and rear axles; and finishing and assembling of front axle assemblies and rear axle assemblies, for 3" A.A. mounts, $28,290. McGill Manufacturing Co., Washington, D. C., ball bearings, $2,036. SKF Industries, Inc., Philadelphia, ball bearings, $613.

Awards under the special Machinery Program: Cincinnati Milling Machines & Cincinnati Grinders, Inc., Cincinnati, Ohio. Group of machines for the manufacture of Operating Rod., Cal .30 Rifle, Ml., $75,438. Universal Tool & Cutter Grinders, $4,043.

Awards under Artillery Program: Wisconsin Axle Division of Timken-Detroit Axle Co., Oshkosh, Wis. Set, Power Transmitting Units for Pilot Tank, $6,996.

LIMOUSINES

• Two new 1939 model De Sotos—the De Luxe 7-passenger limousine at $1285 and the Custom 7-passenger limousine at $1338—have been put into production by the De Soto division of Chrysler Corp. Featuring 136 in. wheelbases and 100 hp. engines, the new models are being built to fill special orders from retail customers.

DEATHS

• John H. Knapp, former automotive executive, died last week in Detroit. Mr. Knapp started his business life with the Durant Dort Carriage Co., of Flint, and was later with General Motors Corp. and the Detroit Gear & Machine Co. At the time of his death he was vice-president of the Norge and Detroit Vapor Stove divisions of the Borg-Warner Corp.

• Adolphe Mongenais, district manager of the Chrysler, Plymouth and Fargo division of the Chrysler Corporation of Canada, Ltd., Windsor, Ont., died after a short illness at his home in Montreal. He was in his 55th year. He had been associated with the Chrysler Corp. in Montreal since July, 1926, entering the service of the Chrysler Corp. in 1925.

• J. E. Stetson, general manager of the Bryant Chucking Grinder Co., died at his home in Springfield, Vt., on Tuesday.

Patent Pooling

(Continued from page 751)

tions and expressed the view that the present patent period of 17 years should not be reduced. Joseph I. Farley, patent counsel for the Ford company, said he had other recommendations but would prefer to discuss them privately with committee members in lieu of making any offhand suggestions.

Mr. Ford, who was directed to go into the history of the company, reviewed briefly the suit filed against the firm back in 1903 under the basic Selden patent after the firm had been denied membership in the Automobile Manufacturers Association. In explaining the company's subsequent failure to join the association after winning the suit in 1911, the witness testified that the Ford Motor Co. had refrained from joining the AMA for the same reason that it declined membership under the NRA automobile code—that to join might restrain competition.

He said the Ford Motor Co. and its affiliates now holds some 400 odd patents, has issued 92 licenses, and has taken licenses on 515 patents held by others. Since 1909, according to the testimony, the firm has not filed a single suit for patent infringement although it has been sued 60 times since 1926. Only one case has been decided against the company in the court of last resort, Mr. Ford told the committee.

Mr. Macauley's explanation of why Packard, although a member of the AMA, does not subscribe to the association's cross-licensing arrangement, was that his company has engaged in extensive engineering development work, thereby acquiring valuable patents "as one of the pioneers in the business." In response to questioning, Mr. Macauley said that Packard weighed its own developments with what the other companies had done and decided against entering the patent pool. His testimony was that the firm holds 1038 active patents, has granted 196 licenses and has been licensed under 176 patents held by others, adding that the patents covered were never, in his opinion, of great importance.

Alfred Reeves, general manager of the AMA, whose members are parties to a cross-licensing agreement made in 1935 and expiring in 1940, described the system sponsored by his group as contributing to competition and the low prices of automobiles, traced its early history, and recalled that the plan developed

partly as a result of the Selden case. He said that manufacturers determined then to keep litigation to a minimum because they "didn't want to be suing each other all the time."

Asked by Mr. Cox to cite the reasons for including under their 1935 cross-licensing agreement patents granted prior to 1930, the AMA spokesmen pointed out that the members since 1930 had launched developing and research programs, the fruits of which many of them feel should be confined to their own use until the development gives them some return on their investment.

Mr. Reeves turned aside a query from Chairman O'Mahoney who asked whether revolutionary patents should be made available to all companies.

"Only a manufacturer could answer that," was the reply.

As described by Mr. Reeves, the patent pooling arrangement sponsored by the AMA, provides for the interchange of automobile patents between members, without charge, and includes patents held by member-companies as of 1930 but excluding, of course, those old basic patents which have expired.

William S. Knudsen, president of the General Motors Corp., was called before the committee on Tuesday and testified that the so-called Ford plan might be alright from the standpoint of the Ford company but expressed the view, in response to questioning, that for his company to adopt the same policy without considering the interests of the stockholders would be wrong.

He told the committee he saw little likelihood of an individual or a single company devising and applying a patent having the potentialities of revolutionizing the industry. "We would either make a licensing agreement with such a patent owner or work seven nights a week until we had something better," Mr. Knudsen declared.

Charles F. Kettering, vice-president of the General Motors Corp., defended patents as valuable to both small and large companies, explaining that they assure valuable protection during the "shirt-losing" periods when an invention is being developed. He told the committee that no one knows how valuable a patent may be until it reaches the consumer.

In substantiation of Mr. Knudsen's testimony that General Motors is not interested in patents as a source of revenue, James McEvoy, patent counsel for the corporation, related that between 1924 and 1937 the company paid out $14,000,000 in patent royalties as contrasted with $3,500,000 collected on patents held by the company.

The Tuesday session, during which Senator Borah, Republican of Idaho, and Representative Sumners, Democrat, of Texas, questioned Milton Tibbetts, vice-president of the Packard Motor Co., was interpreted in some quarters as indicating at least some Congressional members of the committee would sponsor revision of the patent laws as a result of the testimony.

Referring to the AMA's patent arrangement for cross-licensing, Senator Borah called it a case where a group agrees among the members to nullify the 17-year provision of the law.

"Why isn't it a good idea to eliminate the monopoly and make the patent available to all industry?" he asked.

"The 17-year term has worked out very well in the past," replied Mr. Tibbetts. "Why change it?"

"It's worked out well for some people," the Senator countered.

Questioned further by Representative Sumners as to whether there is any good reason why anybody in industry should not be allowed use of a beneficial invention on payment of some reasonable sum, the Packard vice-president recalled that there are many small concerns that depend for their very existence upon the exclusive patent rights.

Senator King, Democrat, of Utah, another committee member, announced that he is considering a proposal to require a yearly fee from patent holders as a means of discouraging the retention of worthless or obstructive patents, and another proposal to provide for recovery of cumulative damages and costs where infringement suits are found unjustifiable.

Earlier in the hearing, Chairman O'Mahoney, who has leaned over backward from the start assuring industry that the committee's purpose was not to conduct a witch-hunt against business, characterized the first day's testimony as indicative that "apparently none of these systems (used in the automobile industry) has restrained the growth of industry and the arts, and all have proved a beneficial thing."

"The characteristic of this industry is that its profits are made from production and the sale of its products rather than through the handling of patents," the chairman said.

BUSINESS IN BRIEF

Written by the Guaranty Trust Co., New York

Some slowing down in the pace of business was indicated last week. For the preceding week, ended November 26, the Journal of Commerce index, reflecting the influence of the Thanksgiving holiday, declined to 87.8, from 92.1, but stood ten points above the figure for the corresponding week last year.

Retail trade throughout the country reflected last week the stimulating effects of colder weather, while holiday shopping increased, according to Dun & Bradstreet. As compared with trade a year ago, greater psysical volumes and lagging value measurements are reported. Department store sales in the week ended November 26, according to reports of the Federal Reserve Board, were 4 per cent below the corresponding 1937 value figure, as against a difference of 5 per cent a week earlier.

Railway freight loadings in the same period declined substantially to 562,084 cars, as against 657,477 cars in the preceding week. But loadings were 1.1 per cent above the comparable 1937 total, a second successive gain over last year's figures.

Professor Fisher's index of wholesale commodity prices for the week ended December 3 stood at 80.4, as against 80.5 for the preceding week, continuing the alternating advance and decline of one fractional point registered in recent weeks.

Member bank reserve balances increased $58,146,000 in the week ended November 30, while total bills discounted rose $478,000, and industrial advances $622,000. Estimated excess reserves, with an increase of $30,000,000, totaled $3,380,000,000, again establishing a new record.

News of the Industry

ADVERTISING NEWS NOTES

The National Sales Crusade, conceived by George W. Mason, president, Nash-Kelvinator Corp., and successfully promoted in a number of cities, was launched nationally with the organization in Detroit last week of the National Salesmen's Institute.

James P. Selvage has resigned as public relations director of the National Association of Manufacturers and will establish his own service in this field in New York.

Extruded Metals, Belting, Mich., has appointed the Drum Agency, Detroit, its advertising counsel.

W. C. Geohegan, Jr., formerly assistant advertising manager of American Oil Co. and later of the promotion department of Gulf Oil Corp., has joined Lennen & Mitchell, Inc.

E. L. Wiebrecht, advertising manager, Eastern zone, for Firestone Tire & Rubber Co., has been transferred to Akron, Ohio. He remains in charge of the New York territory.

Studebaker Local No. 5, United Automobile Workers for a number of weeks has carried in two South Bend Sunday papers a half page advertisement urging the merchants and other citizens of the territory to buy Studebaker cars thereby producing more sales and more jobs and more money and consequently more buying power. To the advertisement was attached the names of the officers of the union and the statement: "This advertisement paid for and inserted by Studebaker Local No. 5, United Auto Workers."

40 Years Ago

The Lamb Manufacturing Co. of Chicopee Falls, Mass., will probably begin soon the manufacture of motor carriages for A. G. Spaulding & Bros., the well known sporting goods house. An officer of the company says they are confident the motor carriage is to have a large place in transportation in the future, and there is no doubt the company will enter this field in a short time, although their plans in this connection are so far indefinite. What they will aim for is to produce a carriage at a popular price propelled by gasoline.

The carriage will be built to carry two persons, will have four wheels and will weigh about 1000 pounds. It will be sold through A. G. Spaulding & Bros., as are the bicycles made by the Lamb Co. The models for the carriage will be submitted to the directors at an early meeting.—From *The Horseless Age*, December, 1898.

ADD RECORDS

● The latest list of automobile records, issued in Paris on Nov. 15, mentions new mile and kilometer flying-start records for Class G, established by Major Gardner on November 9, on the Reichsautobahn between Frankfort-on-Main and Darmstadt, Germany, with an M.G. six-cylinder car of 65.4 cu. in. displacement. The average speed for the flying mile was 186.5 and for the flying kilometer, 186.6 m.p.h.

Martin Testifies

UAW Head Defends Union Before Dies Committee

The long-scheduled apearance of Homer Martin before the Dies Committee investigating un-American activities took place last week during which the UAW president testified that most Communists have been ousted from his union and that the AFL was "equally cursed" with Communism.

Martin, who was under subpoena, was the first witness permitted to come before the committee and refute previous testimony offered by an earlier witness. After defending the automobile workers union, Martin dealt primarily with Nazism and Fascism as he said it exists in Michigan and testified, among other things, that Judge Paul V. Gadola, of Genessee County, Michigan, was a known "labor-hater" and had "close connections with the Fascist movement" in Michigan. It was Judge Gadola who had charged before the committee that Governor Frank

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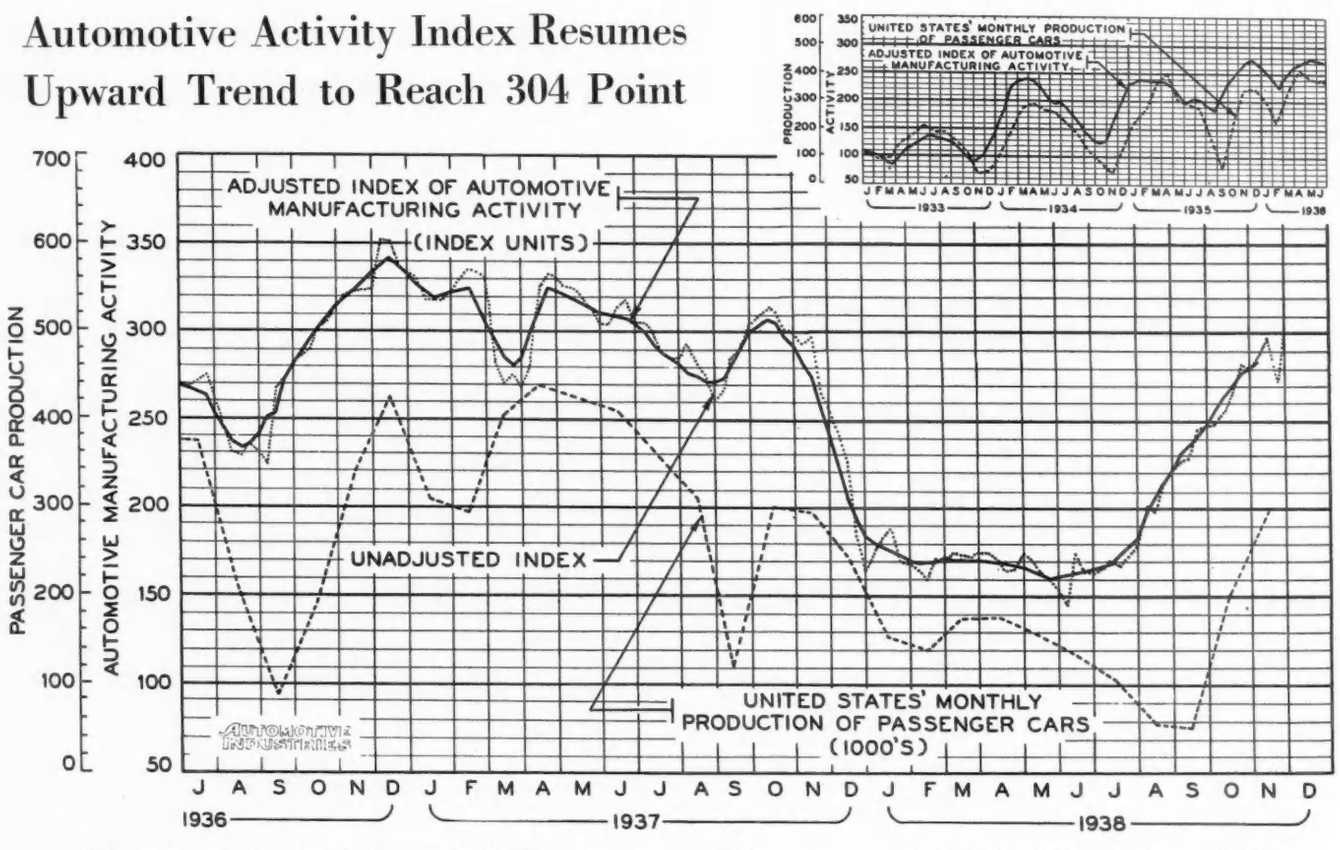
Automotive Activity Index Resumes Upward Trend to Reach 304 Point



The rate of manufacturing activity in automotive plants for the week ending Dec. 3 resumed its upward trend following a drop in the previous week due to plant closings for the Thanksgiving holiday. The unadjusted index figure for the week ending Dec. 3 reached 304, as indicated on the chart above. This was seven points above the mark reached two weeks previously and is the first time since October 1937 that the mark has been over the 300 point.

The adjusted index also continued its upward trend to reach a point of 284, three points above the previous week's mark.

Murphy was guilty of "treasonable activities" in the 1937 strike.

In his preliminary remarks in which he attacked the committee, but which were not permitted to be entered in the record, Martin said:

"This committee had not functioned very long when it became manifest that its alleged objectives were being missed and that by the ill-prepared and loose presentation of reckless statements by irresponsible witnesses, grave doubts were being created as to the reliability and veracity of the charges made.

"Moreover, the unfortunate parade of questionable witnesses by whom outstanding patriotic and law-abiding citizens were attacked indiscriminately and charged with being communists created a definite feeling, universally entertained, that the committee would not and could not make any real contribution to the solution of the problem."

HEARING

Homer Martin (left, with glasses) president of the United Automobile Workers Union; Representative Martin Dies (center), chairman of the House Committee investigating un-American activities; and Representative Harold Mosier, member of the Dies Committee, as they conferred before the UAW president testified before the committee. (*See story on facing page.*)

Labor

Brief Strike Flurries Appear to Mar Peaceful Labor Front

Brief shutdowns of the Fisher Body plant No. 1 and the Buick Motor Car Co. factory at Flint, Mich., affecting some 26,000 workers, marred an otherwise peaceful labor scene in the Detroit area this week. Some men were able to return to their jobs by Tuesday and operations were again in full swing Wednesday after a truce was made through negotiations of General Motors management officials with national officers of the United Automobile Workers union.

The trouble broke out first on Friday last week in the Fisher Body plant when union workers were called out following a dispute over demands of UAW representatives for day wages instead of piece-work remuneration for members employed in the metal and stamping department. Some 9400 workers were affected by the strike closure of the Fisher Body plant and this number increased as the final assembly line at Buick was forced to stop; ultimately the entire Buick factory had to close.

Private hearings were begun this week in Detroit to determine whether seven workers at the Chevrolet gear and axle plant, charged with inciting an unauthorized strike, should be returned to their jobs. Professor I. L. Sharfman, chairman of the department of economics, University of Michigan, presided as referee. Both General Motors Corp. and the UAW agreed to abide by the decision of Professor Sharfman.

Automotive Metal Markets

Steel Company Executives Feel First Quarter 1939 Will See Operations at 60 Per Cent

Extension of current quotations to apply to first quarter 1939 deliveries caused the steel market's character this week to become very much of a routine affair. Much steel remains to be bought by automobile manufacturers and parts makers for conversion during the first three months of the coming year, the procedure now being simplified to the furnishing of specifications sufficiently in advance to insure shipment in time for the assemblies for which the steel is intended. Some of the automobile manufacturers who are still receiving sheets and strip steel bought at prices below current quotations have placed additional orders, presumably at the levels now quoted, which would indicate more orderly competition among steel sellers and steadier market conditions. Ingot capacity employed this week is estimated by the American Iron & Steel Institute at 59.9 per cent. This indicates production at the annual rate of 40,000,000 tons, compared with 20,000,000 tons during the first half of the year and around 30,000,000 tons in the third quarter.

Leading steel company executives expressed themselves this week as confident that their industry would be able to operate at 60 per cent of capacity during the first quarter of 1939. This would mean output at the rate of 42,000,000 tons a year and, considering that in the banner year of 1929 the output was not quite 55,000,000 tons, the steel industry has every reason to be cheerful over the tonnage outlook. Labor costs continue to be very much of a problem, especially for the smaller producers, a group of whom petitioned this week for the reopening of the Public Contract Board's hearings which ended with a finding of 62½c per hour as the minimum wage rate for all steel producers, except those in the South, where the Public Contract Board decreed a minimum of 45c per hour. Demand for cold-finished steel bars, mechanical wire, bolts and nuts from automotive consumers is well maintained.

Tin prices seesaw from day to day. The market for spot Straits tin broke through the 46-cent level last Saturday, but on Monday of this week managed to recover to 46c, with buying rather light. On Tuesday further fractional improvement was noted, some sales at 46¼c being recorded.—W. C. H.

Production

(Continued from page 749)

Hudson and Nash. Also affecting the total for the week was the brief Buick shutdown resulting from the strike rash which broke out last week in the Fisher Body plant No. 1 at Flint.

The mid-week survey indicated that General Motors divisions would turn out about 42,300 units for the current week. Chrysler divisions and the Ford group appeared to be going along neck-and-neck, each adding slightly less than 23,000 units to the week's total. Of the independents, Hudson, Packard and Nash each produced about the same volume this week, with Nash somewhat in the van.

Total production of cars and trucks in the U. S. and Canada for November amounted to 383,040, according to the estimate issued by the Automobile Manufacturers Association.—H.E.B.

News of the Industry

TIRES AND TUBES

● Exports of tires, inner tubes, repair materials and tire sundries, as reported by the Bureau of Foreign and Domestic Commerce, were valued at $11,344,197 during the first 10 months of 1938 as compared with a value during the comparable period in 1937 of $13,392,461, a decrease of 15.3 per cent. Mechanical rubber goods exported during the same period in 1938 were valued at $3,681,241, a decline of 21.7 per cent over the 1937 figure.

● According to statistics released by the Rubber Manufacturers Association, Inc., shipments of pneumatic casings during the month of October, 1938, are estimated at 4,285,233 units. This is the largest number shipped during any month since August, 1937, and represents an increase of 8.7 per cent over shipments made in September, and 8.5 per cent over shipments for October, 1937. Shipments to the automobile manufacturers were considerably larger than for any other month this year, and again contributed substantially to the increased sales volume during October. Industry sources indicate that while October replacement sales experienced a seasonal decline as compared with September, they were considerably above October, 1937.

The Association estimates production of pneumatic casings for October at 4,275,619 units, an increase of 7.7 per cent over September and 7.3 per cent over October, 1937.

DIESELS

● The Buda Co. has announced one of its standard production Diesel models for installation in Ford truck chassis.

The engine used is a four cycle, four cylinder, solid injection Buda-Lanova Diesel, with 3⅝ in. bore by 5⅛ in. stroke, having a 212 cu. in. displacement. The company also announces the completion of two new Buda-Lanova automotive Diesel models for the Mack Manufacturing Co.

These new models will be two of the seven models of Buda-Lanova Diesels on which Mack has standardized for their Diesel requirements.

● The new Dodge 3-ton Diesel line recently announced, will include chassis ranging in wheelbase from 152 in. to 205 in., and delivered at Detroit prices will range from $3230 for the 152 in. wheelbase chassis to $3450 for the 205 in. wheelbase chassis with cab fully equipped. The new Dodge Diesel truck is available in four wheelbase lengths: 152, 170, 180 and 205 in.

GM-CORNELL INDEX

● General Motors Corp., in a joint statement with Cornell University, announced on Monday the inauguration of the first weekly world commodity price index, based on identical commodities and weights, ever to be offered to the public. The index results from a cooperative effort by the two organizations and will be known as the General Motors-Cornell World Price Index. A discussion of the scope and mechanics of the index was published in the Oct. 22 issue of AUTOMOTIVE INDUSTRIES, page 497.

FARM MACHINE EXPORTS

● October exports of agricultural machinery totaling $5,016,518 were 27 per cent lower than the October, 1937 shipments, according to the Machinery Division of the Bureau of Foreign and Domestic Commerce.

Tractors, parts and accessories valued at $3,576,413 accounted for 71 per cent of the total United States export trade in farm equipment during October. The value of this trade was 26 per cent below the October, 1937 total of $4,807,682, reduced shipments being made in almost all items in this group.

Shipments of the carburetor type tracklaying tractor declined 19 per cent to $547,838 from $677,077, and the shipments of the fuel injection type declined 17 per cent.

A slight increase was noted in the exports of tractor parts and accessories, to $679,765 from $637,102 for October of last year.

WHOLESALING COST

● The cost of wholesaling automotive equipment, replacement parts, accessories and related lines ranged between 22 and 29 per cent of sales in 1937 depending on the type of merchandise featured and the size of the wholesale house, according to a survey released by Dun & Bradstreet, Inc. Automotive and equipment wholesalers selling over 40 per cent of their volume in accessories and houses selling primarily to garages and service stations made the best profit showings. On the other hand, profit ratios of automotive and equipment wholesalers, in general, were reduced slightly in 1937 as compared with 1936 primarily because the gross margin and the total expense ratios tend to converge.

DUAL WHEEL CONTRACT

● Robert W. Canfield, treasurer of the Detroit Compensating Axle Co., announces that the corporation has entered into an agreement with Freuhauf Trailer Co. of Detroit involving the sale of a minimum of 2,000 sets of differential-dual wheel assemblies, the first delivery to begin Dec. 1. The Freuhauf concern is said to make about 40 per cent of the heavy duty freight trailers produced and sold in this country.

Plant expansion now under way should bring the axle company's annual capacity up to between 10,000 and 12,000 differential dual wheel sets some time in 1939, or less than a year after the inauguration of commercial production, it is announced.

Wage-Hour Law

(Continued from page 751)

points out that the facts at the time goods are produced determines whether an employee is engaged in the production of goods for commerce rather than any subsequent act of his employer or of some third party. Under the Administrator's latest interpretative bulletin, the following employees have been ruled as coming under the provisions of the law: (1) Employees engaged in repairing, maintaining or reconstructing railroads, ships, highways, bridges, pipe lines or other interstate facilities; (2) employees of wholesalers who purchase their goods outside the state even though their sales are made within the state; and (3) employees of printing establishments, trade associations, research and compilation services disseminating information in interstate commerce.

Pioneer Dies

Hayden Eames, 74, pioneer automobile manufacturer, died Nov. 24 in Cleveland. In 1895 he helped to organize the Pope Tube Co. in Hartford, Conn., and two years later was instrumental in establishing the motor carriage department of the Pope Co. for the manufacture of the Pope-Hartford car. He was also influential in organizing the Columbia Mfg. Co. of Hartford, maker of electric automobiles.

TOOLS OF TOMORROW

Broaching Machines

. . . New Colonial line comprises six tonnage classifications

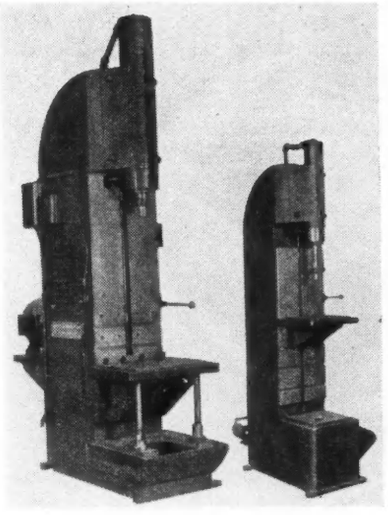
Broaching presses comprising six tonnage classifications in the new line recently announced by Colonial Broach Co., Detroit, are designated as Open Side Utility broaching presses and are recommended by the manufacturer especially for broaching and assembly work on long and bulky pieces.

In these machines the column is provided with a long face-plate incorporating several transversely milled T-slots and rows of tapped holes, permitting adjustment of table height in six-inch steps. Standard clearance between ram and base on the presses is 60 in. (6 to 15 ton models), but this can be increased further by placing riser blocks in the column. To facilitate changing the height of the machines, all main valves and controls are located in the head, while the column is of two-piece construction. (Except 2 and 4 ton models.)

A separate cylinder casting on all models permits rapid change-over of the machines to different tonnages and strokes, without changing the entire head assembly.

Capacities of the six standard machines offered range from 2 to 15 tons, stroke from 18 to 36 in.—although other tonnages and capacities may be obtained.

Two and four ton open side presses



Two of the new line of Colonial open side utility presses. The larger machine is the 10 ton type with 36-in. stroke, while the smaller one is rated at 2 tons with a stroke of 18 in.

follow the same general construction used in the larger models, with but a few points of difference to reduce cost. Columns are of one-piece construction, but the separate cylinder casting design is maintained. These machines also incorporate such features as variable work height; direct drive motors, with external horizontal or internal vertical mounting; separate coolant motor; manual control; adjustable strokes and welded steel construction.

NORTON CO., WORCESTER, MASS.: *An instrument for checking straightness of V-ways on bases of long Norton grinders. The equipment consists chiefly of a bridge of cast-iron planed and scraped to correspond with the flat and V-base ways, a microscope mounted on the bridge, a coil of music wire and clamps for holding the wire in position.*

Modernizing the design of its model S-L jig shear not only resulted in improved appearance of the shear but reduced manufacturing costs approximately 20 per cent for the St. Louis Tool Co., St. Louis, Mo. The S-L jig shear is a power tool, driven by a General Electric split-phase fractional-horsepower motor, for shearing sheet metal up to 18 gage (0.050 in.) steel. It will handle compound curves as small as one-inch radius and inside closed curves without previously drilled starting holes. The knives are hardened tool steel; the upper knife reciprocates at 1750 strokes per min. and the lower knife is fixed but retractable for starting inside closed cuts.

Motor Vehicle Industries Biennial Census

Employment and production in the motor vehicle industries showed considerable increases over 1935, according to preliminary figures compiled from returns of the recent Biennial Census of Manufacturers, released by Director William L. Austin, Bureau of the Census, Department of Commerce.

The combined number of wage earners employed in the "Motor Vehicles" and "Motor-Vehicle Bodies and Motor-Vehicle Parts" industries in 1937 was 479,158, an increase of 23.6 per cent over the 387,801 wage earners reported for 1935, and wages paid, $755,887,379, exceeded the wage figure for 1935, $545,414,168, by 38.6 per cent.

The production of complete motor vehicles and chassis in 1937 was reported as 4,732,426, an increase of 20.6 per cent over the 3,923,052 reported for 1935, and an increase of 156.1 per cent over the 1,848,013 reported for 1933.

Statistics for 1937, with comparative figures for earlier years, are presented in the table below. The combined cost of materials, fuel, etc., and the combined value of products have purposely been omitted, since such combined figures would include a great deal of duplication due to the use of the products of the bodies and parts industry as materials in the motor vehicles industry. No such duplication appears in the combined figure for "Value added by manufacture" (value of products less cost of materials, supplies, fuel, etc.), and this item therefore has genuine statistical significance.

In making use of the figures for the bodies and parts industry it should be kept in mind that the products of some establishments are actually used as materials by other establishments in the same industry. To the extent that this condition exists, there is actual duplication in the figures for cost of materials, supplies, etc., and in the figures for value of products. As stated in the preceding paragraph, the figure for "Value added by manufacture" contains no such duplication and is of considerably more statistical value. All figures for 1937 are preliminary and subject to revision.

	1937	1935	1933	Percent of increase 1935-1937	Percent of increase 1933-1937
"Motor Vehicles," and "Motor-Vehicle Bodies, and Motor-Vehicle Parts" Industries					
Number of establishments	1,062	946	823	12.3	29.0
Wage earners (average for the year) [1]	479,158	387,801	243,614	23.6	96.7
Wages [2]	$755,887,379	$545,414,168	$252,106,467	38.6	199.6
Value added by manufacture [3]	$1,506,444,418	$1,124,775,887	$648,025,693	33.9	132.5
"Motor Vehicles" Industry					
Number of establishments	131	121	122	8.3	7.4
Wage earners (average for the year) [1]	194,527	147,044	97,869	32.3	98.8
Wages [2]	$316,141,350	$217,039,434	$103,784,905	45.7	204.6
Cost of materials, supplies, fuel, and purchased electric energy [2]	$2,394,269,305	$1,814,132,025	$767,768,278	32.0	211.8
Value of products [2]	$3,096,218,569	$2,391,089,954	$1,096,946,283	29.5	182.3
Value added by manufacture [3]	$701,949,264	$576,957,929	$329,178,005	21.7	113.2
"Motor-Vehicle Bodies and Motor-Vehicle Parts" Industry					
Number of establishments	931	825	701	12.8	32.8
Wage earners (average for the year) [1]	284,631	240,757	145,745	18.2	95.3
Wages [2]	$439,746,029	$328,374,734	$148,321,562	33.9	196.5
Cost of materials, supplies, fuel, and purchased electric energy [2]	$1,274,812,733	$1,003,106,211	$437,186,316	27.1	191.6
Value of products [2]	$2,079,307,887	$1,550,924,169	$756,034,004	34.1	175.0
Value added by manufacture [3]	$804,495,154	$547,817,958	$318,847,688	46.9	152.3

Because they account for a negligible portion of the national output, plants with annual production valued at less than $5,000 have been excluded since 1919.

[1] Not including salaried officers and employes. Data for such officers and employes will be included in a later report. The item for wage-earners is an average of the numbers reported for the several months of the year. In calculating it, equal weight must be given to full-time and part-time wage-earners (not reported separately by the manufacturers), and for this reason it exceeds the number that would have been required to perform the work done in the industry if all wage-earners had been continuously employed throughout the year. The quotient obtained by dividing the amount of wages by the average number of wage-earners cannot, therefore, be accepted as representing the average wage received by full-time wage-earners. In making comparisons between the figures for 1937 and those for earlier years, the possibility that the proportion of part-time employment varied from year to year should be taken into account.

[2] Profits or losses cannot be calculated from the Census figures because no data are collected for certain expense items, such as interest, rent, depreciation, taxes, insurance, and advertising.

[3] Value of products less cost of materials, supplies, fuel, and purchased electric energy.

News of the Industry

C.I.T.-UNIVERSAL CREDIT

● Commercial Investment Trust Corp. will become the full owner of Universal Credit Corp., which specializes in the financing of Ford Motor Co. sales, it was reported Wednesday when the company filed a listing application with the Stock Exchange for 250,000 additional shares of common stock. At present Commercial Investment Trust owns all preferred of Universal Credit and 70 per cent of the common, with 40,000 shares of common held by minority interests.

WHEEL PARTS PROGRAM

●The National Wheel and Rim Association is initiating a parts program aimed to secure wider distribution of all necessary wheel attaching parts. A chart has been prepared for service station use which lists and illustrates all wheel attaching parts used by passenger cars and trucks back to about 1930, with dimensions indicated. A car index also has been prepared so that parts may be identified by size or selected from the index.

WHAT ARE THEY DOING?

CHARLES T. RUHF has been elected vice-president of Mack Truck, Inc., and the Mack Manufacturing Co.

W. T. CLEMENT and **S. C. ATTEBURY** have recently joined the sales staff of the Studebaker Corp. Mr. Clement will handle special work for the dealer development division. Mr. Attebury will be district sales manager at the Atlanta branch.

A. H. MATHEWS, W. W. HALSEY, and **R. J. STANTON** have been appointed special sales representatives of the Gould Storage Battery Corp.

J. H. GAMBERTON has been appointed to the staff of **R. SZYMANOWITZ,** technical director, Acheson Industries, Inc.

W. W. SEBALD, vice-president and assistant general manager of the American Rolling Mill Co., has been elected a director of the company. He fills the vacancy on the Armco board of directors caused by the death of **J. H. FRANTZ.**

AVERY C. ADAMS has been appointed vice-president and assistant general manager of sales of Inland Steel Co. He has resigned as manager of sales, sheet division, Carnegie-Illinois Steel Corp.

Resignation of **RAY INGELS** as California state director of motor vehicles was given to Governor F. F. Merriam this week. It is said Mr. Ingels will leave office Dec. 31, when the governor's term expires.

T. B. WILSON has been elected chairman of the board and a director of Transcontinental & Western Air, Inc. He fills the vacancy left by the resignation of **HENRY DU PONT.**

ROY A. FRUEHAUF has been promoted to the position of vice-president and director of sales of the Fruehauf Trailer Co. Prior to the assumption of his new duties, Mr. Fruehauf had served as vice-president in charge of western operations.

PUBLICATIONS AVAILABLE

The fifth edition of the Parker-Kalon Corporation's catalog-data book has been released. It describes in detail the different Parker-Kalon **self-tipping** screws and other Parker-Kalon fastening devices and specialties.*

A new catalog on Wheelabrator Tum-Blast **abrasive blasting equipment** has just been issued by the American Foundry Equipment Co.*

American Car and Foundry Co. has issued a pamphlet on its Berwick **electric metal heaters.***

The Air Reduction Sales Co. has issued two new catalogs (Nos. 21 & 22) covering its complete line of **welding and cutting apparatus and supplies.***

"Job-Test Evidence" is the title of a booklet published by Cummins Engine Co. covering information of interest to dump truck users and contractors.*

Mixing Equipment Co. has published a folder describing its "Lightnin" **portable mixers.***

* Obtainable from editorial department, AUTOMOTIVE INDUSTRIES. Address Chestnut and 56th Sts., Philadelphia.

CONVENTIONS AND MEETINGS

SAE Annual Meeting, Detroit....Jan. 9-13

SHOWS AT HOME AND ABROAD

Grand Rapids, Mich., Automobile Show .....Jan. 2-7
National Motor Boat Show, New York, Jan. 6-14
Seattle, Wash., Automobile Show, Jan. 9-15
Berlin, Germany, Automobile Show, Feb. 17-March 5

A.S.I. Show

(Continued from page 753)

operated units at the show, particularly shop equipment, one is impressed with the steps the manufacturers of such tools have taken to prolong their life of usefulness. Dust and other abrasive matter, the arch enemy of electrically operated tools has been given a decisive blow in many instances. As an example, the portable electric polisher made by the U. S. Electrical Tool Company, Cincinnati, Ohio, is typical. This tool has an air filter which cleans the air before it enters the motor. Dust proof bearings are used and are permanently lubricated.

Coming Legislation

Speaking before the Motor and Equipment Manufacturers Association on Tuesday night Dec. 6, Senator Edward R. Burke, of Nebraska, Democratic leader, predicted that Congress at its coming session is going to do something about undoing many of the present Administration measures, many of which are blamed for present economic conditions. The results of the recent elections also should greatly improve the business outlook, he stated.

Among some of the most important subjects which he said are slated for action by Congress include: Revision of the Wagner Labor Relations Act; consideration of the pressing railroad problem; building up of the nation's defenses on a reasonable basis; reform of relief administration; workable form legislation; revision of the present unworkable neutrality legislation.

In speaking of the Labor Relations Act Senator Burke said:

"If the threat of labor strife could be ended so that industries could be expanded and so that new ones could come into existence a large part of our unemployment problem would be solved at once.

Ourselves and Government

Examiner's Report Filed in "Six Per Cent" Case; FTC to File Brief by Dec. 30

A weekly check list of legislative, executive and judicial actions affecting the automotive industries. First appeared in June 25 issue, p. 831. Corrected to Dec. 7.

Legislative Legacies

MONOPOLY STUDY. The Temporary National Economic (anti-monopoly) Committee discussions with automotive executives concerning patent pooling are reported on page 751 of this issue.

The Civil Aeronautics Authority has expanded its recently created Private Flying Section to the status of a division in its organization setup. Grove Webster, Hackensack, N. J., head of the old section, will be chief of the new division.

LABOR RELATIONS CASES

Ford Motor Co. has filed 33 technical exceptions with the NLRB to report of Trial Examiner Conn Cohalan, holding that company had interfered with the rights of workers at the company's Chicago assembly plant to join the UAW. The examiner cleared the company of charges that it had discharged 27 employes for union activity. Company asked Board to dismiss entire complaint.

FEDERAL TRADE COMMISSION

VS. GENERAL MOTORS. Testimony being given by respondents in hearings still under way in New York. Complaint involves the alleged practice of requiring dealers to handle respondent's parts only.

SIX PER CENT CASE. Examiners report in the GM case has been filed and the FTC has extended the time for filing its own brief to Dec. 30. Ford and General Motors were cited by the Commission in July, 1937, for false and misleading representations in advertising finance plans. Briefs on both sides in the Ford case have been filed and final arguments may be held sometime this month.

FOB PRICES case vs. GM and Ford. GM brief filed. Hearings on the Ford case started Nov. 29. Case involves FTC allegation that price advertising is misleading because of failure to include standard equipment in the advertised price.

FAIR TRADE PRACTICE rules for retail automobile dealers, introduced at public hearings during last NADA meeting in December (see A.I., April 30, 1938), are still under study by the FTC fair trade practice division headed by George McCorkle.

Just Among Ourselves

A Message from the Publisher

I HAVE been making a nation-wide survey of the feeling of men in industry toward the future, based on the recent elections. From this investigation it is apparent that the ballots cast in November are regarded as a demonstration that most of the people in our country are satisfied with the American system of enterprise and that the country is not to undergo changes sufficiently radical to alter the principles on which America was built into the most prosperous country in the world.

Reading between the lines of the many letters I have received, it is quite evident that the voters had two thoughts in mind: one—that the pendulum will not swing all the way back and the citizenry of America will accept a certain number of changes as necessary reforms; two—that the pendulum will not swing all the way across in the other direction and that radicalism will never dominate our country.

Excessive zeal of some labor unions, which resulted in breaches of law and order, has resulted in a popular reprimand to labor-in-politics.

The ever-increasing tax burden is now being recognized by the man in the street as something which must have consideration or business will not go ahead with the speed required for prosperity.

A recognition of these two fundamentals by the statesmen of both parties is a hopeful sign, for it means that our greatest problems will have early consideration.

However, the one outstanding feature of the change in political thinking is that confidence has been restored and that industry is now willing to go ahead with an expansion program.

The next step is the restoration of confidence among investors, and when money is supplied to industry by investors we will have a further expansion of business.

From the publishers' point of view, and I think I am fairly conservative, the outlook is brighter than it has been since 1930.

C. A. MUSSELMAN, *President*,
Chilton Company, Inc.

The Dymo Completely

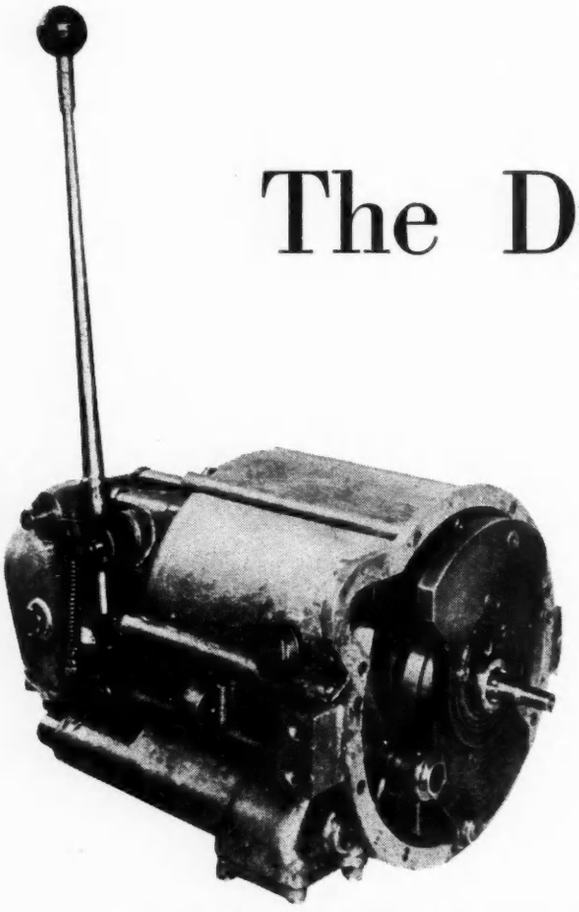


Fig. 1—Dymo automatic transmission, showing centrifugal members on their eccentric and one of the links through which they are driven from the flywheel.

By P. M. HELDT

AN automobile transmission which is to operate entirely automatically, increasing and decreasing the torque on the driven shaft in accordance with the resistance to rotation encountered by that shaft, must, if it be of the mechanical type, operate on the impulse principle. The engine power must be used to store kinetic energy in centrifugal masses, and this energy must be transferred periodically to the driven shaft by means of members capable of oscillating and rotary motion.

By the term "completely-automatic" is meant that as long as the driven shaft rotates at a speed lower than that of the crankshaft, the transmission applies torque to the driven shaft at a ratio which is continuously variable, and that as the speed of the driven shaft becomes equal or nearly equal to that of the crankshaft, the transmission automatically couples the two together for direct drive. The centrifugal masses impart an oscillating motion to a member, and every oscillation of this member turns the driven shaft through a smaller or greater arc, depending on the resistance to rotation of that shaft; as the resistance to rotation increases, the arc through which the shaft is turned by one oscillation of the member automatically decreases, and vice versa. When the transmission is in direct drive, under which condition the resistance to the rotation of the driven shaft is less than the moment impressed on the oscillating member by the centrifugal masses, the oscillating member is held in position firmly by the weights, and participates in the rotary motion, being locked to the driven shaft.

When the transmission is in indirect drive the centrifugal masses have two distinct motions, a rotary motion imparted to them by the engine flywheel through connecting links, and a radial oscillating motion which is due to eccentrics on the oscillating member, around which the centrifugal masses revolve. The oscillating motion is due to the fact that the member carrying the eccentrics then rotates at a lower speed than the engine crankshaft. The centrifugal force on the radially oscillating masses therefore acts alternately on opposite sides of the eccentric. When the centrifugal force tends to turn the eccentrics in the direction of crankshaft rotation, the impulse is

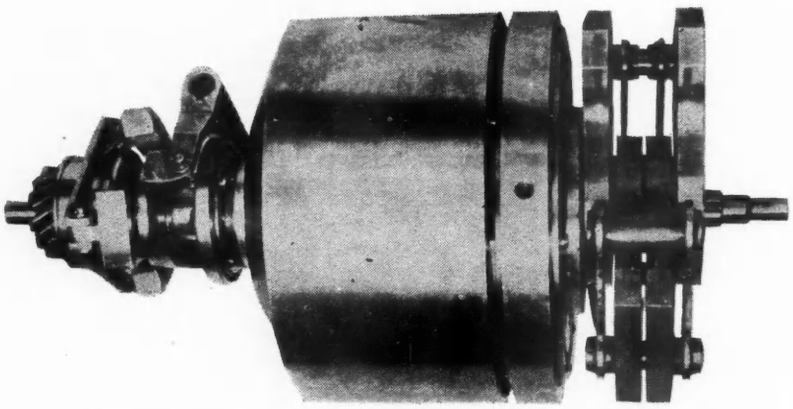


Fig. 2—Top view of transmission showing at the right the centrifugal masses and at the left the shifting collar, drive pinion and synchronizing device of the auxiliary transmission.

Automatic Transmission

is designed to simplify driving and augment the factors of safety and smooth riding.

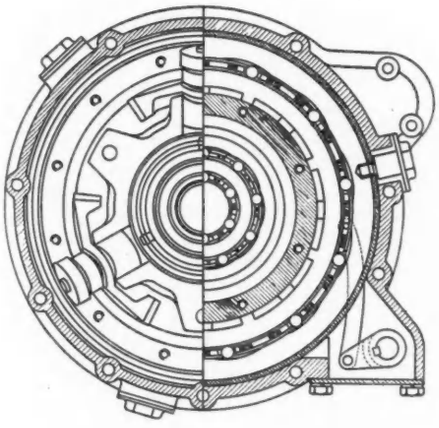
said to be positive, whereas if it tends to turn them in the opposite direction, the impulse is negative.

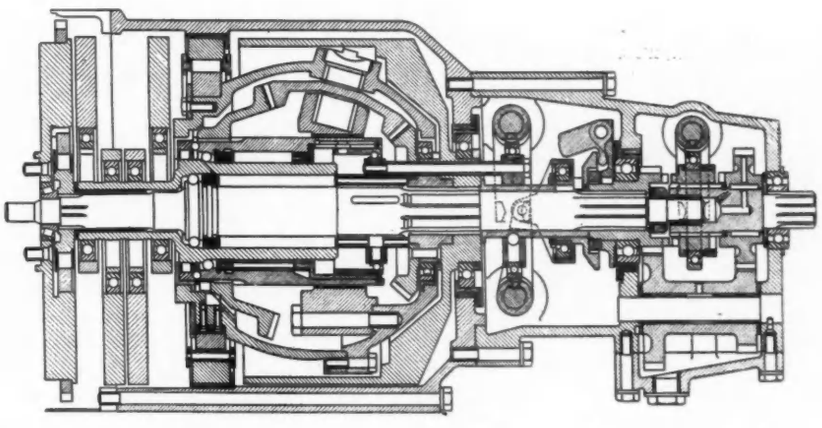
As the speed of the driven shaft increases, the positive impulses increase and the negative impulses decrease in length. With decrease in the speed of the driven shaft the positive and negative impulses tend to become of the same magnitude and duration. Thus the oscillating member with the eccentrics has two motions imparted to it also in indirect drive, a rotary and an oscillating motion. When the rotary motion of the oscillating member equals that of the crankshaft, the oscillating motion ceases and the drive is direct.

The oscillating member with the eccentrics is in the form of a sleeve and will be referred to hereafter as the eccentric sleeve. While the drive is indirect, this sleeve actuates two roller clutches alternately, while in direct drive it acts through only one roller clutch, the one that receives the positive impulse from the centrifugal weights. The roller clutch which receives the negative impulses during indirect drive consists of a sleeve which is connected to the driven shaft through a gear which reverses the direction of the impulse and imparts torque to the driven shaft in the direction of its rotation. As soon as the drive become direct, all of these transmission members become inactive and remain at rest relative to each other.

Transmissions in which torque conversion is effected dynamically have been developed previously, but these have been either of a single-acting type, transmitting only the positive impulses, or of a double-acting type, in which the members transmitting the negative impulses oscillate during indirect drive and move relative to each other in direct drive. A feature of the single-acting type is the intermittent torque on the driven shaft; there is an interruption in the torque after each impulse, which extends over at least one-half a crankshaft revolution. Other features of this type are the heavy centrifugal weights required and the severe vibration in operation, which latter subjects the roller clutch to severe stresses. A characteristic of the double-acting type is the very slow acceleration it gives, which is due to the fact that all of the members transmitting the negative impulse have an oscillating motion during indirect drive and move relative to each other during direct drive.

The Dymo transmission, which has been developed by the Svenska Aktiebolaget Dymo, differs from other transmissions of the mechanical, automatic, continuously-variable type in that both the positive and negative impulses transmit power directly and independently to the driven





Figs. 3 and 4—Transverse and longitudinal sections of Dymo automatic transmission with auxiliary transmission permitting of the use of a "low-speed" rear-axle reduction.

shaft, whereas during direct drive all of the transmission members are at rest relative to each other. During indirect drive, the positive and negative impulses due to the centrifugal weights produce on the propeller shaft a series of positive torque impulses whose duration varies with the speed of the driven shaft. When the vehicle is started from a standstill, the positive and negative impulses are of approximately the same magnitude and duration, but as the vehicle gathers speed the positive impulses increase, while the negative ones decrease in duration. This continues until the drive becomes direct, when the positive impulses furnish a continuous torque. The magnitude and duration of the torque impulses under different driving conditions are shown graphically in Fig. 5. When the vehicle is being started in the reverse direction, the mode of torque transmission is the same as when starting forward, and as a car is never backed at high speed, all reverse motion is transmitted in this way. The direction of motion is reversed by reversing the clutch.

On the other hand, if the car is thrown into reverse by means of a separate reversing gear, it will accelerate backwards the same as in forward drive. The rotary masses of the transmission, which by reason of the design are comparatively small, are said to have the effect of smoothing the curve of torque impressed on the driven shaft. When the engine is idling, the gear is in equilibrium without power flow, because the energy stored in the centrifugal weights during their accelerating motion is returned to the engine during the decelerating motion (the latter half of the stroke).

A vehicle equipped with a transmission of this type remains at rest as long as the engine speed is sufficiently low so that the impulses imparted by the centrifugal weights to the eccentrics are unable to overcome the resistance to motion of the driven shaft. Under these conditions the eccentric sleeve has no motion, either oscillating or rotary. As the engine is speeded up, the torque impressed upon the driven shaft becomes sufficient to overcome the resistance, and the vehicle begins to accelerate. Acceleration is said to be very smooth, as compared with that of a car equipped with conventional transmission. At the beginning the ratio of transmission is large, but as the vehicle gathers speed the ratio is gradually reduced automatically, until finally a direct drive or 1:1 ratio is attained.

In the opposite case, if the vehicle decelerates because of increasing resistance to motion, the indirect drive comes into action once more, thus increasing the torque on the propeller shaft and maintaining the speed or accelerating the car. The engine always remains in driving connection with the road wheels and there is therefore no danger of stalling it.

Control of car speed is effected entirely by means of the accelerator. The driver will want the transmission to function either entirely automatically, or he may want to interfere with its automatic operation, which is possible to a certain extent, as the change-over from indirect to direct drive can be accelerated or delayed. During the transition period from indirect to direct drive, the engine crankshaft must be synchronized with the driven shaft. If the change-over is made without change in throttle position, this involves a slightly noticeable jerk. This jerk can be obviated if the driver lets up on the accelerator pedal so as to reduce the engine speed to that of the driven shaft at the moment of change-over. The change-over in the opposite direction, from direct to indirect drive, takes place gently and smoothly, because here the variable gear takes hold, which adjusts itself to the condition automatically. Change-over to the indirect drive can be effected at an earlier stage than that which corresponds to the automatic transition for the particular resistance encountered, if the driver momentarily accelerates the engine. In that case the centrifugal weights are forced to turn around the eccentrics, and the increase in the drive ratio begins.

If the vehicle should come to a stop on an up-grade, it is not necessary to apply the brakes, as the roller clutches in the transmission lock the driven shaft against backward movement. To continue the journey up hill, the driver need only press down on the accelerator, when the vehicle begins to accelerate once more. To back down hill from a position of rest, the driver depresses the accelerator to just start the vehicle forward; then he applies the foot brake and throws the transmission into reverse.

When the car slows down and the speed of rotation of the eccentric sleeve falls below that of the engine crankshaft, both the centrifugal weights and the eccentric sleeves begin to oscillate, and the drive becomes indirect. The change-over from direct to indirect speed takes place at a lower engine speed than the change in the opposite direction, which is due to the influence of the inertia of the oscillating or rotating masses. The less the inertia of these masses, the smaller will be the difference in the speeds at which the change-overs in the two directions occur, and the quicker will be the acceleration. The manufacturer of this transmission, therefore, should aim to make the oscillating masses

(Turn to page 773, please)

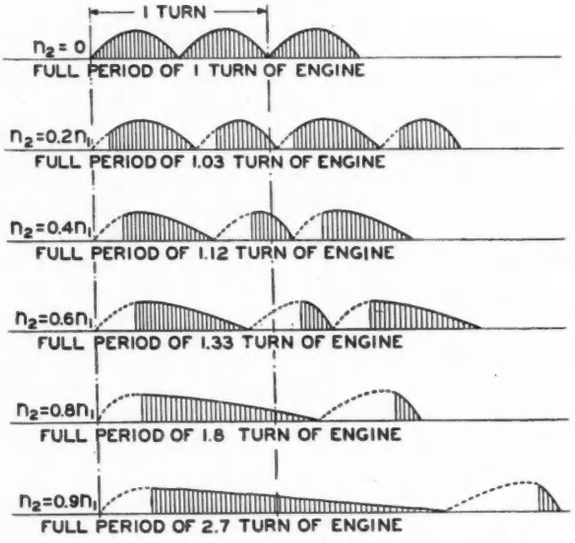
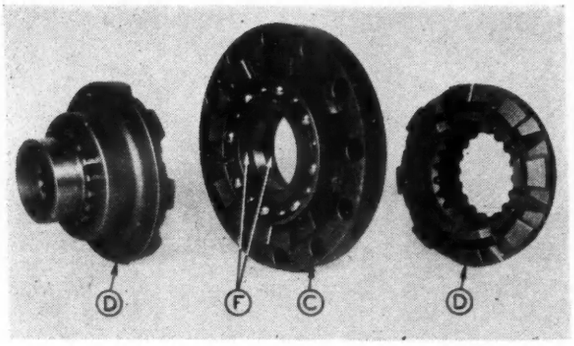


Fig. 5—Torque impulses exerted by the centrifugal masses under different conditions. The impulses are evened out, partly by the members (gears which convert the negative into positive impulses and partly by the gearcase flywheel. n_1 = crankshaft r.p.m.; n_2 = propeller-shaft r.p.m.



Disassembled parts of the Multi-Pull differential

Differential to Prevent Spinning Drive Wheels

A NEW type of differential known as the Frederickson Multi-Pull, is being marketed by Multi-Pull, Incorporated, 53 West Jackson Blvd., Chicago. It is claimed to be of simple design and consequently to lend itself to economical production. The device is being manufactured for Multi-Pull Inc., by the Perfection Gear Co., Harvey, Ill.

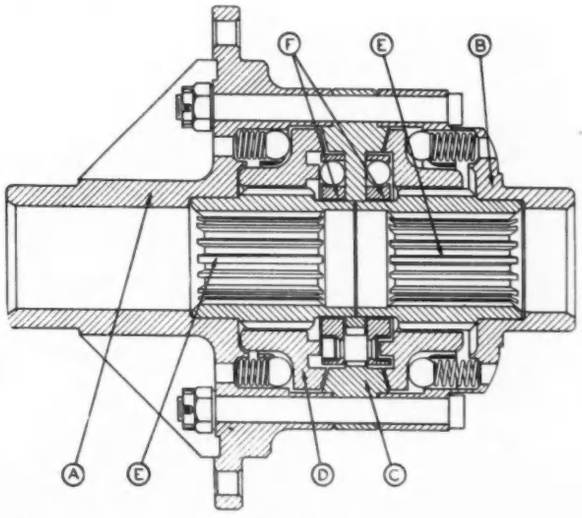
Multi-Pull is a differential of the type which prevents spinning of one of the connected driving wheels when that wheel encounters slippery pavement. From the drawing reproduced herewith it will be seen that the side gears, pinions, and carrier of the conventional differential are replaced by side plates and a central drive ring. Between the two halves of the housing, A and B, is located the center drive ring C, the halves of the housing and the drive ring being held together by 12 "through" bolts.

The inner ends of the axle shafts fit into the splined adapter fittings E. Mounted on the two splined fittings are the side plates D. Inside the drive ring C are two center rings F, each of which is equipped with eight steel balls. Both halves of the housing are machined with 12 holes on the inside, into which are fitted springs and steel balls which serve to hold the side plates D in engagement with the drive ring C under normal operating conditions. The maximum movement of the springs is only about 3/16 in. Each spring exerts a force of 3 lb., hence the total pressure against each side plate is 36 lb. Since the springs have so little movement and are well supported in the housings, their life is said to be unlimited. It is the claim of the maker that the small movement of the parts ensures proper functioning of the device throughout its life.

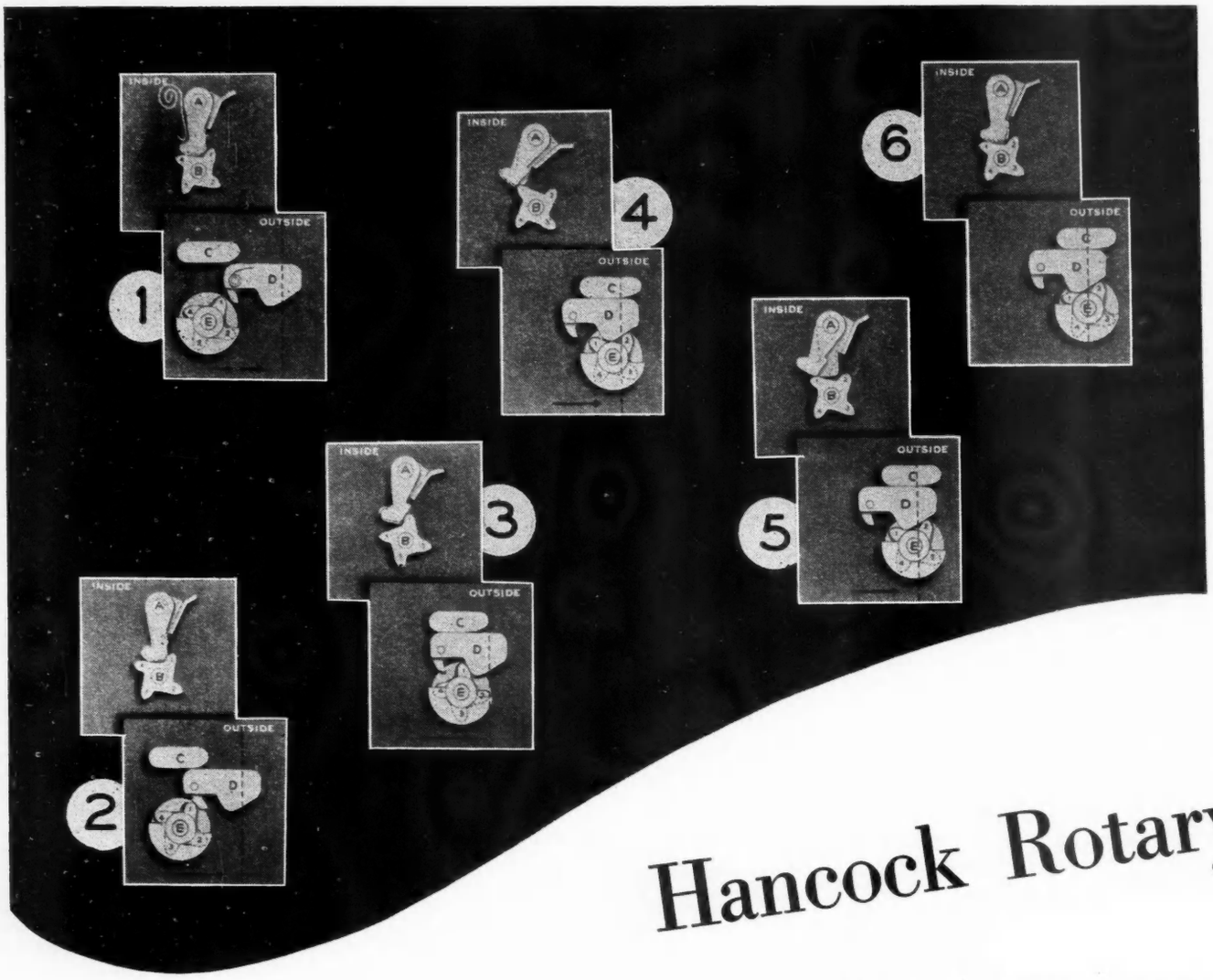
As shown in the illustration, in normal operation the side plates D are engaged with the drive ring C, this being the positions assumed by the parts while the vehicle is on a straight-ahead or straight-back course. However, as soon as the front wheels are swung from the straight course, so that the outside rear wheel must travel faster than the inner wheel, side plate D, to which the outer wheel is secured, moves out of engagement with drive ring C, and slides along the splines of fittings E. The illustration shows the right side plate disengaged. Further movement of the outside wheel causes the side plate to again engage with the drive ring, due to the pressure by the 12 springs and balls. The cam action between the side plates D and the drive ring C is caused by the steel balls in the center ring F.

Lubrication of the device is effected by the same lubricant ordinarily used for rear axles, as specified by the vehicle manufacturers and oil companies.

The action of Multi-Pull is entirely automatic and the makers state that life tests on installations have shown no appreciable wear on any of the parts. It is silent in operation and functions equally well during forward or backward motion of the vehicle. Replacement units at present are available for 1½-ton trucks; other sizes are to be announced later.



Sectional view of Multi-Pull differential



Hancock Rotary

Fig. 1 — Door-closing progression of rotor and locking cams.

AN innovation in items of body equipment that made its first appearance a year or two ago and was pioneered by the Studebaker Corporation, is the Hancock rotary door lock, a product of the Hancock Manufacturing Co., Jackson, Mich. Among 1939 models carrying these locks, besides the Studebakers, are the Chrysler, Dodge, and DeSoto. The change-over from the conventional bolt latch to the rotary lock requires structural changes in the door, and we understand that several makers deferred adoption of the new lock until 1940, so that provision can be made for the lock in the dies for next year's door stampings.

With the conventional door lock, in order to provide an adequate factor of safety, the bolt needs a very strong spring, and this in turn makes it hard to close the door. In the rotary latch, three separate, smaller springs are provided, and it is claimed that a single one of these is capable of operating the latch in case one or two of the springs should break. However, the possibility of spring breakage is remote, as the Hancock latch, unlike the conventional type, does not resist the door in closing.

As may be seen from the series of drawings reproduced herewith, the springs are used only to draw the locking cams into position, one at a time, until all three cams are fully engaged. It is the cams that hold the door in the locked position —not the springs, as in the case of the bolt.

As will be seen from the drawings, the cams are so arranged that they engage with the inside of the rotor one at a time. The instant cam No. 1 is pulled into contact with the rotor, its spring continues to exert the necessary pull to force the rotor further around, thus allowing cam No. 2 to start its engagement, and then cam No. 3. There are, therefore, three separate, but cumulative, pressures applied to the rotor. Because the rotor works only in the closing direction, it is obvious that once the door is partly latched, every jolt or vibration assists the cams in their closing action; in fact, the maker claims that once the closing action is started the Hancock latch actually closes itself.

It requires a full deflection of the door handle before the cams are lifted out of engagement (see drawing) and the rotor is given its freedom. Only then can the door be opened.

The series of drawings in Fig. 1 show the progression of the rotor and the corresponding positions of

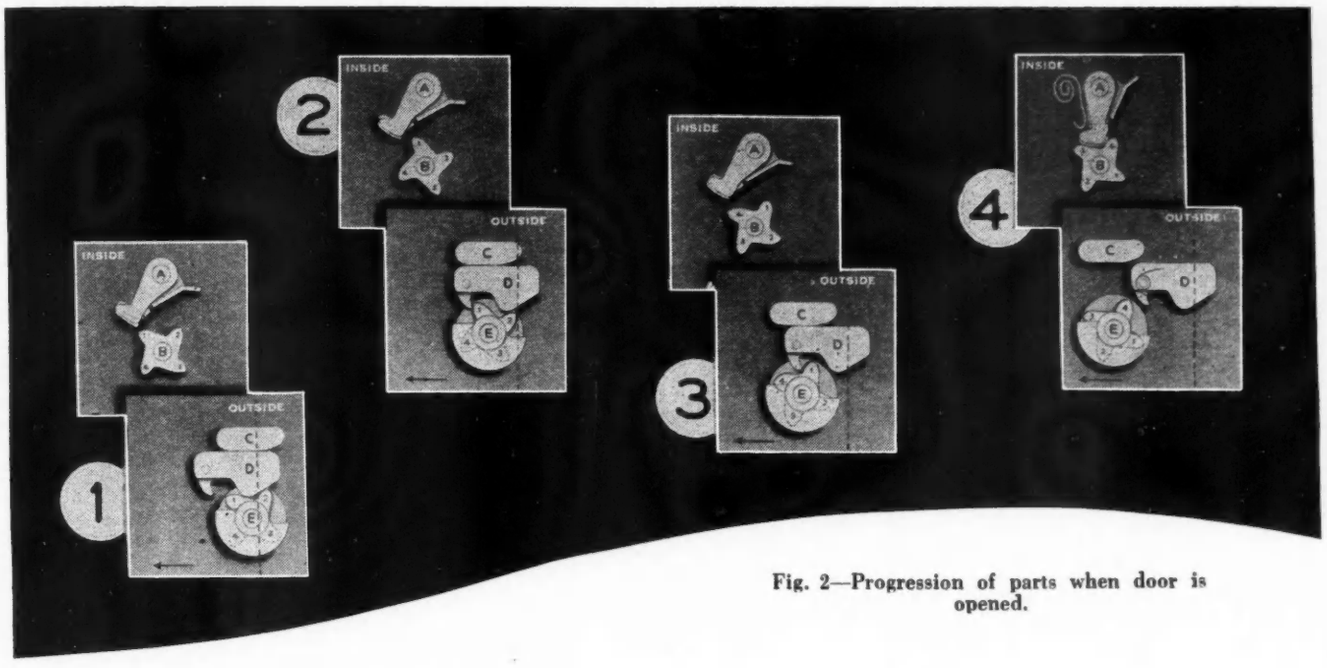


Fig. 2—Progression of parts when door is opened.

Door Lock on 1939 Cars

the locking cams when the door is in process of closing. View No. 1 shows the rotor latch E, with striker C directly above, approaching the keeper D, the rotor and striker being on the door and the keeper mounted on the post. With the exception of the rotor, which is a zinc-base die casting, all parts are of stamped steel. Note the positions of the spring and the keeper safety spring. The other views are self-explanatory, leading up to the final one which shows the three cams fully engaged and the door completely closed.

Fig. 2 is a series of drawings showing the actions involved in opening the door, with the cam and rotor latch indicated in corresponding positions. View No. 1 represents the start of the opening process, with the locking cams forced out of engagement by deflection of the door handle. This frees the rotor so that it can revolve on its axis without hindrance. In this view, A represents the stamped-steel cams, three in number; B, the die-cast rotor; C, the stamped-steel striker; D, the stamped-steel keeper, and E, the die-cast rotor latch. The final view shows the door fully open, with cams released so that they force the rotor to a new neutral position ready for closing.

In Fig. 3 the left-hand view shows the position of the door handle when the cams are fully engaged, while in the right hand view are shown the handle position and the cam action in opening the door. Note that the handle must be moved to the limit before the cams are released. When in this position the rotor is free to turn in either direction.

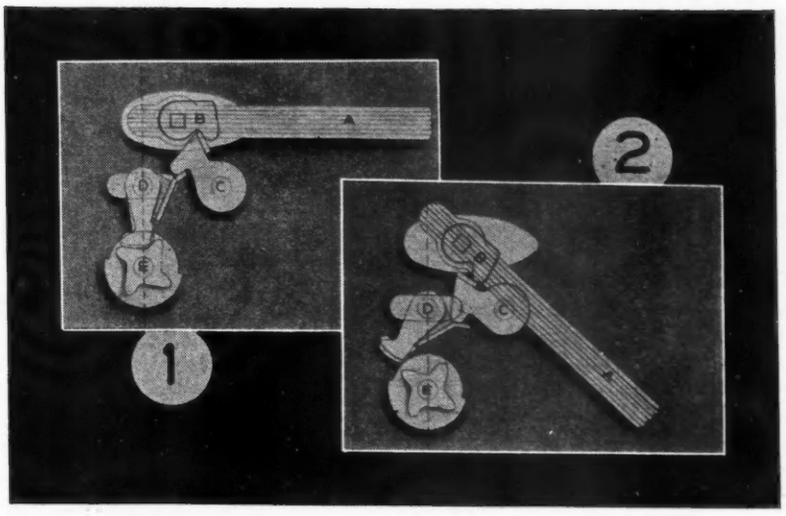
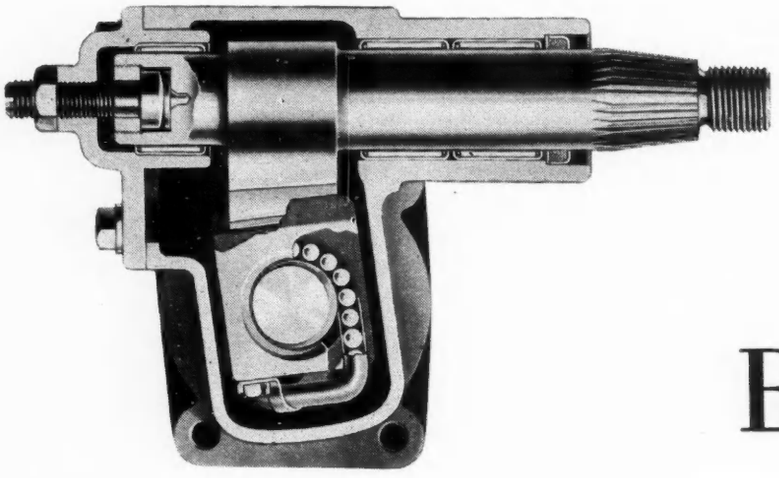


Fig. 3 — Position of the door handle when closed (1) and when open (2).



Ball-nut gear, section on pinion-shaft axis.

Ball-Nut and

TWO distinct types of steering gear are now being manufactured by Saginaw Steering Gear Division of General Motors Corporation, viz., the hour-glass worm-and-roller type and the hour-glass worm-and-sector type. There are two modifications of the hour-glass worm-and-roller type, one using a ball-bearing, the other a needle-bearing roller tooth. This latter is called—rather incorrectly—a plain roller-tooth gear. For a given weight and gear reduction, the ball-bearing roller-tooth gear is the most expensive, but the most efficient. The worm-and sector gear is the least expensive and the least efficient, but it is the most suitable for heavy-duty applications, while the plain-roller-tooth gear is in between for cost and efficiency. Saginaw Steering Gear Division has to supply gears for a multiplicity of units and finds outlets for all three types.

There has long been a search for a design of steering gear which would combine the efficiency and consequent steering ease of the ball-bearing roller-tooth gear with the heavy-duty characteristics of the worm-and-sector type in a reasonably sized unit, and Saginaw Steering Gear Division believes it has the solution to this problem in its "ball-nut gear," which is standard equipment on several 1939 G.M.C. trucks. It consists of a worm with a ground helical groove running within a nut with a similar ground groove, the grooves being filled with steel balls. The combination acts as a screw and nut with rolling instead of sliding motion between its parts. We are informed that under working loads efficiencies as high as 98 per cent have been attained.

The photographs reproduced herewith show the worm and nut, together with the ball-return tube which transfers the balls from one end of the nut to the other. This return tube is fitted into reamed holes in the nut, so located that the center line of the path of the balls in the tube intersects the center line of the path of the balls in the helical groove in a plane perpendicular to the tube and through the axis of the worm. The tube ends are milled off with a cutter shaped like the groove of the worm and set at the approximate helix angle of the groove. This removes that part of the groove which would interfere with the worm and leaves a finger that protudes into the groove and guides the balls in passing from the tube into the grove, and vice versa.

To convert the reciprocating motion of the nut into the desired rotary motion of a pitman-arm shaft, rack teeth are cut on the nut, and the pitman-arm shaft is made integral with a pinion meshing with this rack. It will be seen that contact between the rack and pinion is not normal, the rack being slightly tilted. This allows of the rack being moved into or away from the rack to allow for manufacturing variations and to compensate for wear in service. The rack is an ordinary straight-sided type, and the pinion is generated in a gear shaper, with the cutter head tilted at an angle with the work. The result of this is that the proportion between addendum and dedendum varies across the face of the pinion.

In order to allow for the normally greater wear on the surfaces in contact when the gear is in the central or "straight-ahead" position, the teeth are so cut that they mesh closely in the central position, but with a certain amount of backlash in off-center positions. It is said to have been found possible to reduce the backlash in off-center positions to a fraction of that found in the present type of hour-glass worm gears, which require excessive clearances to provide for wear resulting from small contact areas and high unit loads. Reduction of backlash in

the off-center position is an important problem in steering gear design, and the manufacturer believes that the "ball-nut gear" represents a worthwhile improvement in this respect.

The fit between the worm and nut obviously must be close enough so that there will be no backlash between these parts, and grinding

New type of steering gear offered with claims for greater safety, freedom from excessive backlash in off-center positions, smoother steering and less road shock.

Roller-Tooth Steering Gears

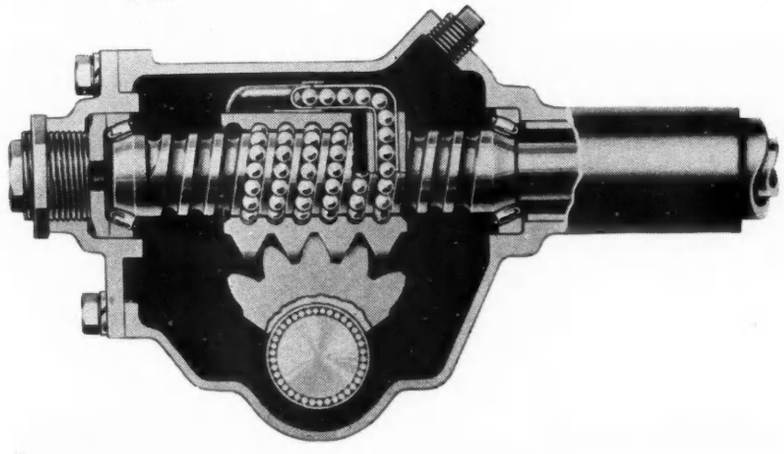
methods have been developed which permit of such a degree of accuracy as to make these parts interchangeable.

It will be obvious to any engineer that the capacity of this type of gear is limited by the loading of the balls. No attempt has yet been made to determine this loading mathematically, and reliance is placed on tests and on determination of the number of balls in contact, by static tests of cadmium-plated parts. On comparable designs, the ratio of balls in contact in the ball-nut gear to balls in contact in the roller-tooth gear averages slightly above 2 to 1. If the maximum stress is near this ratio, the life of the races should be greatly increased. Driving tests are said to have shown that, size for size, these gears will last from two to four times as long as the ball-bearing roller-tooth type.

We are informed that somewhat higher efficiencies have been obtained with the ball-nut gear than with the ball-bearing roller tooth type, and that the "feel" of the former also is superior. One reason for this may be that it is practically impossible to grind an hour-glass worm, whereas grinding of the worm and nut of the ball-nut gear is accomplished without difficulty. This grinding results in smoother operation of the gears.

An occurrence during the experimental development of the ball-nut gear showed that if a ball breaks, it is likely to become jammed in the ball-return tube. This prevents transition of the balls thereafter, and the gear then functions as a rather inefficient worm-and-nut device, but the car is still safe to drive. Since proper sizes of the gears were determined and methods of grinding the worm and nut developed, there are said to have been no further cases of balls breaking in service. The maker therefore presents this new type of steering gear as having definite advantages from the standpoint of safety, as well as offering the advantages of freedom from excessive backlash in off-center positions, greater durability and consequent longer life, higher efficiency, resulting in easier and smoother steering, and less road shock and easier return from turns (though these latter two qualities would seem to be mutually exclusive).

Ball-nut gear, section on worm axis.



New Form of Clutch Spring

A NEW type of clutch spring used in the Buick Series 40 for 1939, instead of having the usual straight-line characteristic, or a constant "spring rate," shows the relation between deflection and spring pressure represented by the curve of Fig. 1.

In order to prevent slipping under maximum engine torque, the spring must press the plates of the clutch together with a certain force, and with the conventional coil spring or springs, the spring pressure increases further when the pedal is depressed to disengage the clutch. This is undesirable, because it means that the driver must exert heavy pressure on the pedal to hold the clutch out of engagement.

One solution of the problem of a clutch which requires little pedal pressure in the disengaged position lies in the use of an "over-center" spring in addition to the regular clutch spring. When the clutch is engaged, the "over-center" spring acts on a crank which then is in the dead-center position, hence this spring is ineffective, and the clutch is held in engagement by the full force of the regular clutch spring. But as the clutch pedal is depressed, the crank on which the "over-center" spring acts moves out of the dead-center position, and this spring then counteracts the regular clutch spring, thus reducing the pressure required to hold the clutch in the disengaged position.

Buick now has found a type of spring which has essentially the same characteristic as the combination of the regular clutch spring and the "over-center" spring. As shown in Fig. 1, when pressure is first applied to this spring in the direction of its axis, the resistance of the spring to deflection increases substantially in proportion to the deflection, but the rate of the spring gradually decreases, and with a deflection of ¾ in. the pressure attains its maximum value of 300 lb. With the clutch engaged, the deflection is only slightly greater, and the pressure exerted by the spring is still close to the maximum value of 300 lb. If the spring is deflected further, as when disengaging the clutch, its pressure de-

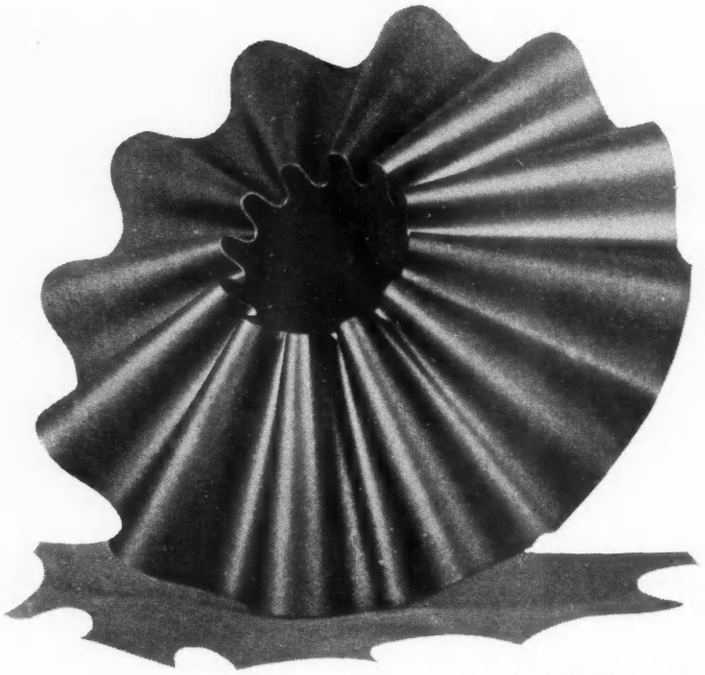


Fig. 2. Special cone spring for the Buick 40 clutch, showing corrugations in the surface.

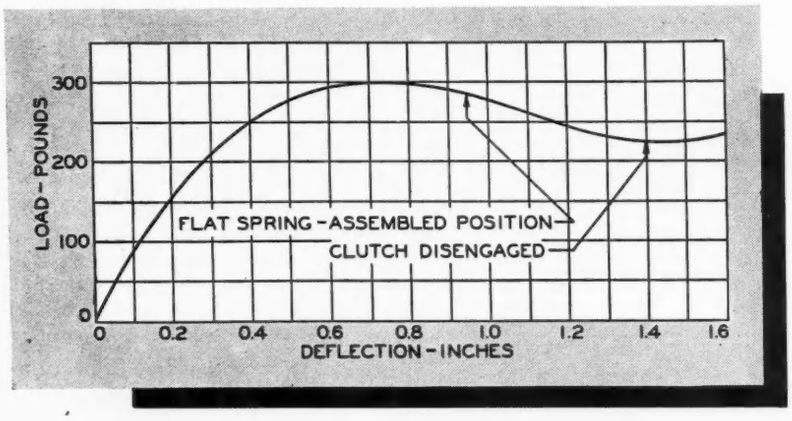


Fig. 1. Characteristic load-deflection curve for the Ingersoll clutch spring.

has a varying rate of deflection pressure ratio

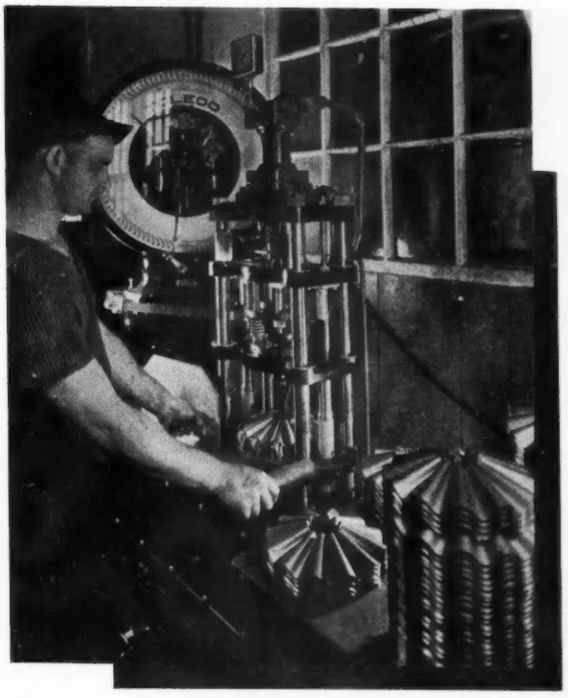


Fig. 4. Each spring is tested at the Ingersoll plant for load and deflection characteristics on this special machine fitted with a Toledo scale.

creases, and for the deflection corresponding to full disengagement it amounts to only 225 lb. With a straight-line characteristic, a spring which shows 300 lb. pressure for a deflection of 0.95 in. would show 500 lb. at 1.6 in. deflection.

This characteristic is obtained from what may be described as a spring of conical-disk type with deep radial folds or corrugations. The pressure of the spring increases as it approaches the flat position, and decreases as this position is passed.

It can be readily understood that this spring presented entirely new problems of design and production. Fig. 2 shows the form of the finished spring, which is made of Ingersoll Cross Temp alloy steel, a product of the Ingersoll Steel & Disc Division of Borg-Warner Corporation, the complete spring being fabricated in the Chicago plant of the Ingersoll concern. Cross Temp steel is cross-rolled, and this process is said to result in a "mesh" structure that resists splitting and tearing in all directions. It is maintained that ordinary straight-rolled steel would not stand up under the stresses imposed by the forming process applied to the spring.

A high degree of accuracy is maintained in the operations performed on the spring blank. The disk is blanked and the center hole pierced in the conventional manner. It is the operation of forming that subjects the material of the disk to very severe stresses, and to enable it to withstand these, the disk is first annealed. The dies used in forming the corrugations are so shaped that they will deform the disk but not stretch the material. This forming operation is a very delicate one and depends for its success on material of the proper analysis, accuracy of gage, correct hardness, correct setting of the die, and the use of an appropriate lubricant. After being formed the spring is heat-treated, and special equipment is used in this operation to assure that all springs will come of the correct free height.

Decarburization during heat treatment must be avoided, and this calls for control of the atmosphere in the furnace. Fig. 3 shows a load of springs being discharged from the furnace with controlled atmosphere. After being removed from the furnace, the springs are shot-blasted, and each spring is tested for deflection under load in the testing machine shown in Fig. 4.

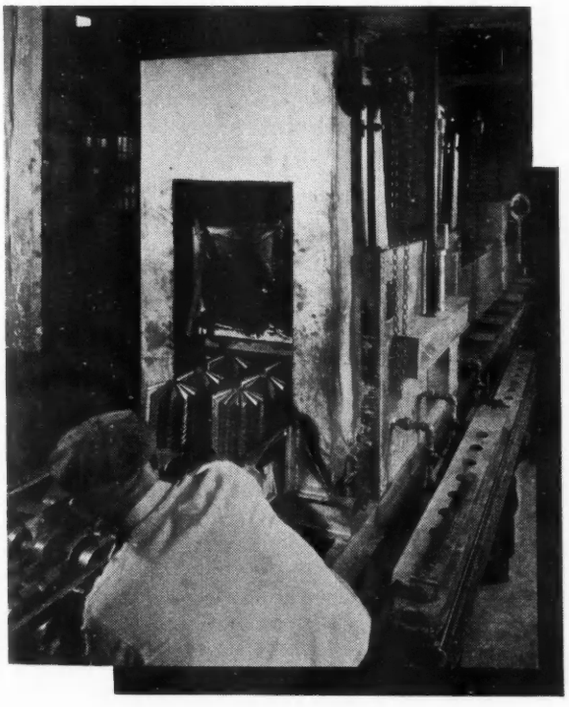
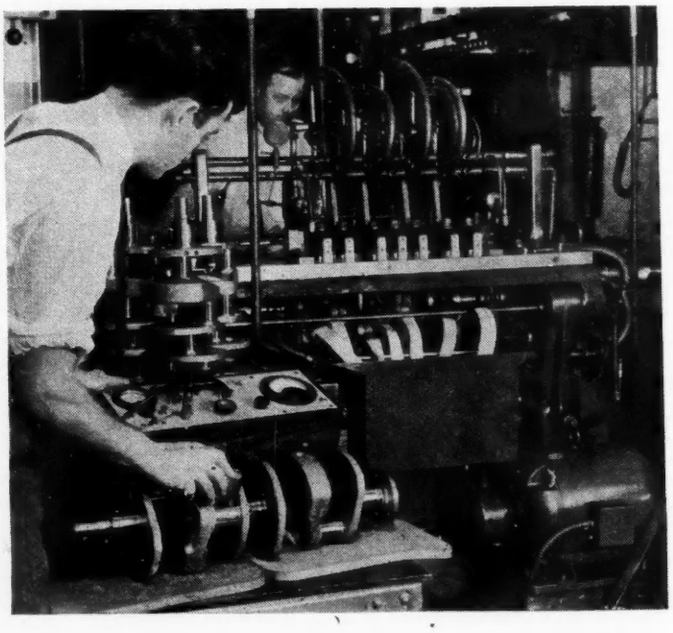


Fig. 3. Discharge end of furnace with controlled atmosphere, used for drawing the formed spring blanks, without decarburization of the surface.



The smoothness of the crankcase bearing surface being measured on the profilometer at the Ford plant

Production Lines

Hand Books

Judging by the number of new engineering handbooks offered at the recent National Metal Exposition it's going to be a good bookshelf year for the engineering fraternity. Right on the heels of the Exposition, we have received a big handsome leather ring binder containing engineering data on Bower bearings. It's a complete manual comprising sections on engineering information, bearing dimension sheets, lubrication instructions, etc.

More Jobs

What machinery does for workers in creation of more jobs and higher wages is tersely summed up in the experience of a single automobile manufacturing company which, although not among the largest, has been in business continuously from the early days of motor making.

In 1908 this company was thriving. It employed 3000 men. With comparatively little machinery they worked 60 hours a week to produce an annual volume of goods amounting to a little less than $2,000 per employe. They earned an average of $625 a year, or $12 a week.

In the 30 years that followed the company invested more than $30,000,000 in machinery and mechanical equipment.

In 1937 the average payroll of the plant was around 6500 men. Each man was backed by an average of $5,000 of machinery, which saved muscles and sweat and more than one third of his former hours of toil. The 40-hour week was in effect, but part of the year business was slack, so the average hours per man during the year were 1760. The production for the year amounted to $10,000 per employe, with 40 per cent fewer hours of work. The average annual earning was $1,630 —two and a half times as much pay to each of more than twice as many men as were working for the same business 30 years ago.—*Automobile Facts*, November, 1938.

"Brag" Books

One of the "secrets" of our calling is the splendid cooperation afforded by the engineering departments of the industry, for which we are duly grateful this time of the year. Goodly percentage of them provide complete details of the engineering features in a confidential book, called in our circles—the brag book. One of the most comprehensive we have seen this season is the Engineering Features book issued by Chevrolet. It's a thick, spiral-bound volume bristling with meaty information. It may be noted in passing, as our own private opinion, that the brag books constitute the best we have in engineering literature, the confidential nature of the contents being the only bar to a general recognition of this fact.

Light Weight Structures

You ought to become acquainted with a designer in these parts whose aim in life is to develop motor car structures of pleasing form and lighter in weight than any comparable job now on the road or on the boards. This man already is known for his development of bus and taxicab jobs using light-weight tubular structures and he is impressed with the possibilities inherent in the use of tubular structure for framing passenger car bodies. It is really amazing to find what can be done with a passenger car structure combining conventional all-steel body technique with ingenious disposition of tubular members.

Plastic Finish

Those concerned with the manufacture of motor vehicle hardware, particularly the die casters, have been interested in the development of decorative finishes of various kinds. Most promising is the nitrocellulose coating which may be produced in many colors and in metallic or pearl essence effects harmonizing with interior trim. This year marks the first big step forward in the adoption of this type of finish, with the DeLuxe Ford, the new Mercury, custom model of the Lincoln-Zephyr, and Commander Studebaker, leading the vanguard. No doubt this has been welcome news indeed to many of our friends in the industry.

Chrome Cylinders

Recent technical news from Europe indicates considerable activity in the chromium plating of engine cylinder walls, particularly on large Diesel engines. Evidently they have worked out the right procedure as the reports intimate that the life of the walls is practically unlimited.

—J. G.

Dymo Automatic Transmission

(Continued from page 764)

as small as considerations of strength permit. The speeds of automatic transition can be calculated in advance, as can also the accelerations obtainable.

When the engine speed drops below that of the propeller shaft, as it will when the foot is removed from the accelerator, the engine acts as an automatic brake. Therefore, the driver has the same control over the vehicle as with a conventional transmission, while operation of the car is claimed to be much easier, as gear-shifting is entirely eliminated.

It has been pointed out in the foregoing that when rotating masses are attached to a shaft through the intermediary of eccentrics, two power impulses are produced per revolution, one during half of the stroke in one direction, the other during a half stroke in the opposite direction. The magnitude of the arc during which power is applied in one direction or the other depends in the first place on the centrifugal force on the rotating masses, and in the second place, on the resisting moment on the driven shaft. In the same degree as the resistance to rotation of the driven shaft increases, the arc through which the power is applied, decreases and the gear ratio, increases. Under the opposite conditions, the arc over which power is transmitted by the eccentric shaft increases as the resistance to motion decreases.

The Dymo automatic continuously variable transmission described in the foregoing is illustrated by the accompanying drawings and photographs. One of the drawings shows a vertical longitudinal section through the axis. The transmission members are enclosed in a housing which is normally bolted to the flywheel housing of the engine. Centrifugal weights are journaled on the flywheel. These centrifugal masses turn on ball bearings and in doing so exert forces on eccentrics on the eccentric sleeve. The eccentric sleeve transmits the impulses to the driven shaft by way of a clutch system comprising bevel gears. All of the members by which the torque conversion is effected are located inside a housing which, while the drive is indirect, are locked in the outer housing against forward motion, but which rotates at crankshaft speed when the drive is direct. Reversal of motion can be effected either by moving the locking device into the opposite position for the engagement of the rollers, or else by an ordinary reversing gear. The transmission, moreover, can be provided with ordinary gears to meet unusual conditions of speed and acceleration.

A hand-operated auxiliary transmission which gives the advantages of an overdrive can be readily combined with the Dymo transmission. This consists of a geared speed reduction mechanism incorporated be-

tween the Dymo and the propeller shaft. When this is used, the rear-axle reduction ratio is made smaller than usual, so that the rear-axle reduction in conjunction with the reduction in the auxiliary transmission gives the normal speeds and driving characteristics. The car is then started with both the Dymo and the auxiliary transmission operating, and is accelerated in that way up to perhaps 30 m.p.h. At between 20 and 23 m.p.h. the Dymo transmission goes into direct drive, and the car can be operated in this way, without any need for gear shifting, in congested traffic, on rough roads, etc., but for operation in the open country the auxiliary transmission is cut out, by merely letting up on the accelerator pedal and then by means of a separate clutch pedal shifting the auxiliary transmission into high, this shifting operation being facilitated by a synchronizing mechanism.

I understand that the Dymo transmission so far has been installed in four cars. One installation was in a Ford Junior weighing 1550 lb., which had covered something like 23,000 miles at the time the information concerning the gear was forwarded. Much of this mileage was covered in indirect drive in hilly territory. Another installation was in an Essex car weighing about 3300 lb., which had covered about 6000 miles; a third was in a Ford Junior de luxe, weighing 1750 lb., which had covered about 5000 miles, and the fourth in another Ford Junior de luxe which had been placed in service only recently.

A test of one of the Ford Junior cars equipped with the Dymo transmission was made by Capt. John Néren, a licensed inspector of automobiles and engines in Stockholm. This test covered acceleration on steep grades, stopping and starting on up-grades without using the hand brake, driving at very low and low speeds on up grades, starting on the level with the throttle nearly closed, starting quickly on the level, driving in procession, acceleration from traffic-light stops, and general maneuvering. Captain Néren, after giving his results in each of these tests, summarized them as follows:

"In my opinion the gear is quite practicable under different conditions that may occur while driving a motor car both in the country and in town. For beginners it presents very material advantages over an ordinary gear in such a way that it should be possible to learn driving in a fraction of the time required for learning to drive an ordinary car. Even to people with very little driving practice this automatic gear presents great advantages."

Precision wire ropes in sizes from 1/16 in. to 4½ in. diameters are made in the new plant of the Gilmore Wire Rope Division of the Jones & Laughlin Steel Corp. at Muncy, Pa. Distinguishing characteristics of the Gilmore product are said to be extraordinarily close tolerances on diameter and lay, and the use of tape identification of grade, instead of paint, which the company regards as inimical to proper lubrication under many conditions.

THE LINDE AIR PRODUCTS CO., UNIT OF UNION CARBIDE & CARBON CORP: *A new oxy-acetylene cutting attachment which will be useful for shops where the amount of cutting does not justify the purchase of a separate cutting blowpipe, and for those operations in the field where incidental cutting is to be done or where a minimum of equipment is desired.*